Department of Energy
Washington, DC 20585

SEP 18 2009

MEMORANDUM FOR INES TRIAY
ASSISTANT SECRETARY FOR ENVIRONMENTAL MANAGEMENT

FROM: PAUL BOSCO
DIRECTOR, OFFICE OF ENGINEERING AND CONSTRUCTION MANAGEMENT

SUBJECT: Transmittal of the External Independent Review Report for the P Area & R Area Closure Projects at Savannah River Site, South Carolina

This memorandum forwards the report from the External Independent Review (EIR) of the P Area and the R Area Closure Projects at Savannah River Site, South Carolina. The review was performed from August 10 to September 14 2009. The EIR was conducted to support Critical Decision-2 and 3 (CD-2/3), Approve Performance Baseline and Start of Construction, under the American Recovery and Reinvestment Act (ARRA) of 2009. Based on this review we do not validate the projects' baselines in view of significant scope definition, cost estimate, schedule, risk management, and project management issues that need to be resolved. Our EIR Team identified 11 major findings, 16 findings, 23 negative observations, 2 neutral observations, and 8 positive observations that are each discussed in the body of the report attached.

The specific deficiencies include:

- Scope, cost, and schedule were not firmly and properly supported with sound underlying technical, economic, and programmatic basis, assumptions, and front-end planning.
- Basis of cost estimate for major activities was not traceable to clear resources for man-hours or dollars
- Significant discrepancies existed between the scope definition and key performance parameters
- Schedule development (interfaces, critical path and contingency) was fragmented and ambiguous
- Risk management lacked project-specific plans and analyses

The SRS project team and EM are working to address these issues and restate the scope of work, performance baseline cost and duration for the same scope key performance parameters, and execution plans for the P&R Areas Closure projects. Upon restatement of both projects, OECM will conduct a Phase II EIR.

Please feel free to contact me or have your staff contact Carmelo Melendez of my staff at (202) 586-6465 if you have any questions or comments concerning this review.

Attachment
cc: Ingrid Kolb, Director, MA-1
Cynthia Anderson, Director, EM ARRA
Bob Raines, Deputy Assistant Secretary Project Management, EM-10
Jeff Allison, Site Manager, Savannah River Site
Rodrigo Rimando, Federal Project Director, Savannah River Site

FINAL REPORT

CD-2 EXTERNAL INDEPENDENT REVIEW

OF

ENVIRONMENTAL MANAGEMENT

P AREA AND R AREA COMPLETION PROJECTS

AT THE

SAVANNAH RIVER SITE

AIKEN, SC

SEPTEMBER 14, 2009

Conducted by:

U.S. Department of Energy
Office of Engineering and Construction Management
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ACRONYMS

ACPs	Area Closure Projects
AHA	Assisted Hazards Analysis
AMCP	Assistant Manager for Closure Projects (DOE/SR)
ANSI	American National Standards Institute
AOU	Area Operable Unit
ARRA	American Recovery and Reinvestment Act of 2009
ASA	Auditable Safety Analysis
ASME	American Society of Mechanical Engineers
BCWS	Budgeted Cost of Work Scheduled
CAP	Corrective Action Plan
CD	Critical Decision
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulation
D&D	Deactivation & Decommissioning
DNFSB	Defense Nuclear Facilities Safety Board
DOE	Department of Energy
EE/CA	Engineering Evaluation/Cost Analysis
EIR	External Independent Review
EM	DOE Office of Environmental Management
EPA	Environmental Protection Agency
ES&H	Environment, Safety/Hazards & Health
ESS	Essential Site Services
EVMS	Earned Value Management System
F	Finding
FFA	Federal Facility Agreement
FPD	Federal Project Director
FY	Fiscal Year
HA	Hazard Analysis
HA/S	Hazard Analysis/Safety
IPT	Integrated Project Team
ISMS	Integrated Safety Management System
KPP	Key Performance Parameter
LOIs	Lines of Inquiry
M	Million
M&O	Management and Operating
MF	Major Finding
NRC	Nuclear Regulatory Commission
O	Observation
OECM	Office of Engineering and Construction Management
OPCs	Other Project Costs
PACP	P Area Closure Project
PAOU	P Area Operable Unit
PBS	Project Baseline Summary
PDRI	Project Definition Rating Index
PEP	Project Execution Plan
PMP	Project Management Professional
P&RACPs	P and R Areas Closure Projects
QA	Quality Assurance
QAMP	Quality Assurance Management Plan
QC	Quality Control
RAP	Recovery Act Program
RACP	R Area Closure Project
RAOU	R Area Operable Unit
RCBSA	Radiological, Chemical, and Biological Sabotage Analysis
RCRA	Resource Conservation and Recovery Act
R&D	Research and Development
RLS	Resource-Loaded Schedule
RSER	Removal Site Evaluation Report
SCDHEC	South Carolina Department of Health and Environmental Control
SQA	Software Quality Assurance
SR	Savannah River Operations Office (DOE)
SRNL	Savannah River National Laboratory
SRNS	Savannah River Nuclear Solutions, LLC
SRS	Savannah River Site
S&S	Safeguards and Security
TEC	Total Estimated Cost
TEP	Team Execution Plan
TPC	Total Project Cost
WBS	Work Breakdown Structure
WSRC	Washington Savannah River Company

KEY DEFINITIONS

- A ***Major Finding*** is any deficiency, condition, shortcoming, error, or omission that affects the project mission, the proposed performance baseline scope, Key Performance Parameters (KPPs), total project cost (TPC) and/or Critical Decision (CD)-4 schedule, or in the professional judgment of the EIR Team, is of such significance that safety, quality, risk management, planning, funding, other documented basis, or the ability of the Project Team to successfully execute the baseline is jeopardized. Major Findings can also include CD or baseline change prerequisites. Corrective actions (e.g., updated project documents and evidence files) and plans resolving Major Findings must be reviewed and accepted by the External Independent Review (EIR) Team prior to an EIR Team recommendation to the Department of Energy's (DOE) Office of Engineering and Construction Management (OECM) to validate the baseline or proceed with project execution. (This could be a two step process where the critical deficiency, condition, shortcoming, error, or omission is corrected and a definitive plan and schedule identified for any remaining corrective actions following the EIR Team recommendation).

- A ***Finding*** is any lesser deficiency, condition, shortcoming, error, or omission which does not impact the project mission, scope, KPPs, TPC, or CD-4 schedule, but in the professional judgment of the EIR Team, could diminish safety, quality, risk management, planning, funding, other documented basis, or the ability of the Project Team to successfully execute the baseline, unless corrected. At a minimum, a definitive corrective action plan and schedule to make necessary changes that resolve Findings must be reviewed and accepted by the EIR Team prior to an EIR Team recommendation to OECM to validate the baseline or proceed with project execution.

- An ***Observation*** is not a finding but is a comment on other project aspects that were evaluated by the EIR Team. Observations may be positive, neutral, or negative. Negative observations typically identify actual or potential project issues (not considered findings) and provide a recommendation that the Project Team can consider to improve project planning, management, or performance. Positive observations give credit for project management measures taken by the Project Team that merit recognition and may serve as a "lessons learned" for other Project Teams. Neutral observations, while neither negative nor positive, are included to show that an area was, in fact, reviewed by the EIR Team. Negative observations for which suggested improvements are recommended do not require resolution acceptance by the EIR Team. However, in any subsequent review, the EIR Team should note the Project Team response to observations and assess whether there has been any negative impact to project performance where the observation and suggested improvement were not totally incorporated. Negative observations of a prevalent or systemic nature will result in a Finding and associated recommendation.

EXECUTIVE SUMMARY

INTRODUCTION

As requested by the U.S. Department of Energy (DOE) Office of Engineering and Construction Management (OECM), *JUPITER* Corporation augmented an OECM led external independent review (EIR) of the P Area Closure Project (PACP) and the R Area Closure Project (RACP) at the Savannah River Site (SRS) near Aiken, SC. Collectively, these projects will be referred to as the P and R Areas Closure Projects (P&RACPs). *JUPITER's* role was to provide subject matter experts in support of OECM validation of the proposed performance baseline for the P&RACPs. The review was conducted in accordance with the OECM Statement of Work and was consistent with tailored requirements of DOE Order (O) 413.3A [Section 5.h.(3) *Performance Baseline Validation Review*]; guidance provided in DOE Guide 413.3-9 *U.S. Department of Energy Project Review Guide for Capital Asset Projects*; tailored requirements of the OECM *Standard Operating Procedure* of July 2008; and subsequent OECM direction and guidance.

In accordance with DOE O413.3A, OECM is required (when considering the results of an EIR) to validate the performance baseline of projects which have a total project cost (TPC) estimate equal to or greater than $100 million. The purpose of the EIR is to determine whether the project can be executed to the proposed performance baseline (scope, cost, and schedule), and whether the project is being planned and executed in compliance with DOE O413.3A. Performance baseline EIRs are more than a review of cost and schedule. In addition to determining whether the performance baseline should be executable through project completion, the EIR should determine whether:

- Scope, cost, and schedule are firmly supported with sound underlying technical, economic, and programmatic basis, assumptions, and front-end planning.
- Design is mature enough to support definition and development of credible and sufficiently accurate cost-and-schedule baselines.
- The Federal Project Director (FPD) is certified at the appropriate level and is prepared to manage the project or program.
- An Integrated Project Team (IPT) with an appropriate complement of personnel having the requisite skill set, commitment, and effectiveness is in place and prepared to successfully execute the project.
- Appropriate management systems and processes are in place and functional.
- Thorough risk management plans were prepared, and relevant and comprehensive risk and contingency analyses have been conducted and properly documented by DOE and its contractor.
- An acceptable Federal Project Execution Plan (PEP) has been completed, coordinated, and approved.
- The scope being designed reflects the mission need, functions, and requirements.
- All required safety aspects were satisfactorily addressed and documented by ensuring that appropriate safety inspections and reviews were performed and requirements have been met.
- All National Environmental Policy Act requirements were satisfied.

The EIR Team addressed lines of inquiry (LOIs) in 10 review areas addressing technical, cost, schedule, and management topics. The EIR Team reviewed project documentation prior to and during the site visit (August 10-14, 2009), interviewed project participants, and prepared the draft EIR Report for factual accuracy review by the Project Team. The EIR Team developed major findings, findings, observations, and associated recommendations. This EIR Report presents and discusses these in detail and consolidates them in a Corrective Action Plan (CAP) shell attached to the report as Appendix D. Major findings and findings were discussed with the Project Team during the site visit.

PROJECT PLANNING CONTEXT

Prior to the American Recovery and Reinvestment Act (ARRA) of 2009, the P and R Areas Completion Projects (ACPs) were managed as operational subprojects under Project Baseline Summary (PBS) 0030, Area

Completion Project, funded as part of the National Defense Authorization Act. PBS 0030, as well as all other PBSs at SRS, are included in the SRS Environmental Management Program 2008 PEP.

Upon funding of the ARRA project, which included pulling the P&RACPs from the out-year budget to near-term baseline execution, SR was directed to plan and execute individual projects for the P and R Areas Operable Units (AOU). Additionally, EM's Recovery Act Program (RAP) Portfolio Management Framework, dated July 10, 2009, was approved on July 14, 2009, by the Assistant Secretary for Environmental Management, eight days after the SRNS ARRA Baseline package was submitted to DOE. While transitioning from National Defense Authorization Act funding to ARRA funding, converting out-year planning packages to near-term execution, and implementing the EM's RAP Portfolio Management Framework, SR was directed to start managing certain portions of the P and RAOUs as capital asset projects instead of operating projects as stated in the 2008 PEP. EM Headquarters also directed that project baselines must be established and approved by the end of FY2009. The convergence of all these requirements in a short timeframe created a high risk of inadequate baseline planning. The EIR Team believes this risk has been realized as evidenced by the major findings and findings throughout this report.

CONCLUSIONS AND RECOMMENDATION

The overall assessment of the EIR Team is that there are significant deficiencies in scope definition and design completion, key performance parameters definition and verification methods, schedule development (interfaces, critical path and contingency), basis of cost estimate, risk management (lack of project-specific plans and analyses), project management documentation and an attenuated proprietorship by the federal project management team. Also, the SRNS earned value management system (EVMS) has not been certified. Further, some project decommissioning work is proceeding without Acquisition Executive authorization. Accordingly, the OECM EIR Team recommends that the baseline not be validated until these deficiencies are corrected. Satisfactory resolution of deficiencies will be closeout of major findings and successful closeout or an acceptable path forward for findings. The major findings and findings and associated recommendations are compiled in the CAP in Appendix D of this report. Negative observations and associated recommendations also are compiled in Appendix D for the Project Team's consideration.

The EIR Team identified 11 major findings (summarized following Table ES-1 below), 16 findings, 23 negative observations, 2 neutral observations, and 8 positive observations that are each discussed in the body of the report.

Table ES-1: EIR Findings and Observations

	1. Technical Scope	2. Basis of Schedule	3. Basis of Cost	4. Risk Management	5. Project Management	6. ES/H&H	7. Quality Assurance/Control	8. Safeguards and Security	9. Transition Planning	10. Lessons Learned	Totals
Major Findings	1	3	2	1	3				1		11
Findings	3	2	1		7		2		1		16
Negative Observations			2	1	8	6	2	2	2		23
Neutral Observations				1		1					2
Positive	1		1			3	1	1		1	8

Observations											

The major findings are:

- **MF-1-1:** The Project Scope is not adequately defined and documented to allow identification and quantification of risks.
- **MF-2-1:** Important interfaces are missing from the schedule.
- **MF-2-2:** A true critical path is not present in the schedule.
- **MF-2-3:** Schedule contingency is not included in the project baseline schedule.
- **MF-3-1:** Several major activities in the cost estimate, principally waste unit remediation, do not have basis for man-hours and dollars.
- **MF-3-2:** The cost estimate is based on self-performing project design and construction services, whereas the current acquisition strategy is to subcontract the majority of work scope.
- **MF-4-1:** P&RACPs do not have project-specific risk management and assessment documents or demonstration of risk monitoring.
- **MF-5-1:** Project-specific Federal PEPs are incomplete and not approved.
- **MF-5-2:** Decommissioning work and procurement awards are proceeding without CD-3 authority from the Acquisition Executive.
- **MF-5-3:** The EVMS system is not certified.
- **MF-9-1:** Key Performance Parameters (Completion Criteria), as well as their validation methods, have not been determined and included in the project baselines.

Concerns identified by the EIR Team relate to some extent to almost all of the ten significant DOE Project Management issues addressed in the DOE Contract and Project Management Root Cause Analysis Corrective Action Plan (CAP) issued in July 2008. Significant concerns in P&RACPs (corresponding to the Root Cause Analysis CAP issues) relate to front-end planning, risk management and assessment, cost estimating, requirements management, and project oversight.

COST AND SCHEDULE SUMMARY

A complete cost estimate was not provided for either of the projects prior to the site visit, because the technical scopes of the projects had not been adequately defined. Cost contingency and management reserve amounts were not available for either project, because project-specific risk analyses had not been completed as of the EIR Team site visit. Therefore, a comprehensive, supportable project cost estimate was not available for either project for review by the EIR Team. During the EIR Team site visit, the Project Team did provide a one-page basis-of-estimate roadmaps (without management reserve and contingency) for the scope as defined at that time, but there were too many uncertainties in scope definition, and the roadmaps were too summary for the cost estimates to be verified by the EIR Team.

Current P&RACPs milestones are shown in Table ES-2 below. As discussed in Section 2 of the EIR Report, the project schedules provided to the EIR Team contained significant deficiencies, including no designation of DOE critical decision milestones. Therefore, the dates of future CDs and of major project execution milestones were uncertain as of the end of the EIR Team site visit.

Table ES-2: P&RACPs Major Milestones

Milestone	Description	Scheduled Date	Actual Date
CD-0	Approve Mission Need		Note 1
CD-1	Approve Preliminary Baseline Range		Note 1
OECM EIR Site Visit	Obtain EIR support for approval of CD-2		August 10-14, 2009
CD-2	Approve performance baselines (scope, schedule, cost)	TBD[2]	
CD-3	Approve commencement of PAOU and RAOU decommissioning work	TBD[2]	
CD-4	Approve project completion	TBD[2]	

Note 1. The Secretary of Energy's approval of the DOE-SR ARRA Project proposal constitutes CD-0 and CD-1 approval of the SRS $1.615 billion project scope that has been accelerated from the Out-Year Planning Estimate Range time frame into April 1, 2009 through September 30, 2011 (reference Section 4.1, page 27 of *Project Execution Plan for American Recovery and Recovery Act Project*, V-PEP-G-00004, Revision F, July 20, 2009).

Note 2. Firm dates were not provided to the EIR Team as of the end of the site visit.

BACKGROUND AND DESCRIPTION OF PROJECTS (from draft Federal PEPs dated August 5, 2009)

Pursuant to ARRA and through execution of its core mission activities, DOE's Office of Environmental Management (EM) is seeking to execute and complete a number of projects from April 8, 2009 through September 30, 2011. Desired outcomes include to:

- Complete deactivation and decommissioning (D&D) of facilities that provide no further value (to reduce long-term liabilities and maximize resources for cleanup).
- Remediate sources of radioactive and hazardous constituents that contaminate soil and ground water.
- Reconfigure/relocate/replace systems impacted by D&D that are required to support remaining site operations in a safe and cost-effective manner to reduce risk.

Following are summary scopes for the SRS P and R Areas Completion Projects. These descriptions were taken from the draft Federal PEPs provided to the EIR Team on August 5, 2009, as modified by the Project Team's factual accuracy comments on the draft EIR Report.

P Area Completion Project

P Area is approximately 100 acres in size and includes the 105-P Reactor building and associated waste units surrounding the structure. Contamination of concern includes solvents, metals, and various radionuclides, including tritium and cesium.

Scope that will be performed includes:

- Install vadose zone remediation systems at two potential source areas (PSA-3A and PSA-3B)
- Complete in situ decommissioning of P-Reactor:
  - Place 130,000 cubic yards of grout.
  - Treat 4,000,000 gallons of contaminated water from in the Reactor disassembly basin building.
  - Remove stack.
  - Grout disassembly basin.
  - Deactivate and decommission disassembly structures.
  - Build up roofs.
  - Seal 105-P building.
- Complete remediation of waste units within P-Area, including the following:
  - P-Area Process Sewer Lines
  - P-Area Reactor Area Cask Car Railroad Tracks

- P-Reactor Disassembly Basin Potential Releases
- P-Reactor Cooling Water Reservoir/Pump House (186P/190-P)Potential Releases
- Building 105-1P, No. 2 and 5 Basin Deionizers Pad
- Building 710-P, Radiation Zone Storage Facility
- Building 904-8G, Emergency Cooling Water Retention Basin
- Building 717-9P, Pipe Fabrication Shop
- Building 105-P, Reactor Building
- Building 106-P, Process Water Storage Tank
- Engine House, (108-1P)
- Engine House, (108-2P)
- Building 109-P, Process Water Storage Basin
- P Ash Basin – 188-P
- P007 Outfall
- P002 Outfall
- P-Area research wells: Install wells in support of Micro-organism Chlorinated Ethane Destruction microbiological remedial technology demonstration. This entails installing wells to inject microbes and nutrients, and monitoring wells to determine efficiency. Scope includes: 1) drilling, installing, and developing wells; 2) technical oversight; 3) sampling, analysis, and data management; and 4) reporting.

R Area Completion Project

R Area is approximately 120 acres in size (excluding the Reactor Discharge Canal) and includes the 105-R reactor building and associated waste units surrounding the structure (including groundwater). It is located in the Lower Three Runs Watershed. In general, the primary sources of contamination at the RAOU are due to facility operations. Spills, leaks, accidental releases, or simply operations may have resulted in a release of hazardous and/or radioactive substances. Contamination of concern includes solvents, metals, and various radionuclides (including tritium and cesium).

Scope that will be performed includes:

- Complete in situ decommissioning of R-Reactor:
  - Place approximately 130,000 cubic yards of grout.
  - Complete grouting of the Reactor disassembly basin.
  - Remove stack.
  - Deactivate and decommission disassembly basin.
  - Modify roofs.
  - Seal the 105-R building.
- Complete remediation of all waste units within RAOU for the following:
  - Area on North Side of Building 105-R, lay down area north of 105-R and R Area Reactor Disassembly Basin
  - Combined spills north of building 105-R
  - Cooling water effluent sum (107-R)
  - Process water storage tank (106-R)
  - R Reactor disassembly basin potential releases
  - R Area process sewer lines
  - R area reactor cask car railroad tracks
  - Building 122-R, process storage building
  - Building 109-R, purge water storage building
  - Building 108-1R, Engine House
  - Building 108-2R, Engine House
  - Isolated Contaminated Area
  - R Area Ash Basin
  - R Area Groundwater

EIR REPORT

The EIR Team conducted this review in accordance with review areas and LOIs shown in the EIR Review Plan. The EIR Team's results and conclusions for each review element and LOI are stated below.

1. TECHNICAL SCOPE

1.1 Summary

The EIR Team interviewed the following personnel:

- Mike Serrato, SRNL
- Frank Sappington, SRNS
- Tom Gaugwan, SRNS
- Mo Kasrall, SRNS
- Jack Musall, SRNS
- Bill Griffin, SRNS D&D
- Chris Bergren, SRNS Area Completion Projects (ACP) Project Manager
- Marisa Trahan, SRNS ACP Program Coordination Manager
- Ray Hannah, DOE Office of the Assistant Manager for Closure Projects (AMCP) P Area Dep. Project Manager
- Wade Whitaker, DOE AMCP FPD
- Tony Long, SRNS ACP, D&D Project Manager
- Rita Stubblefield, DOE ACP, DOE Dept. Project Manager
- Ronald Socha, SRN ACP, Dept. Lead
- Jeff Ross, SRN ACP, Technical Lead

The EIR Team reviewed the following P&RACPs documents:

- Assisted Hazards Analysis (AHA) ER-3981, Work Package No: WP-RAT-2009-7012-0002, Subcontractor to Provide Tree Removal and Chipping Services at the P Area Ash Basin and P007 Outfall
- AHA ER-3976, Hauling Soil from Burma Road Borrow Pit to Stockpile in R-Area
- AHA ER-3951, Work Package No: WP-RAT-2009-1230-0001, Subcontract for Personnel to Remove Railroad Tracks and Contaminated Soil Near R Reactor Building
- Specification for On-Site Production of Ready-Mixed Concrete (U), C-SPC-G-00071
- 105R Building Presentation of electronic model showing building sections for design planning, 8/6/09
- Statement Of Work for 105-R & 105-P Stack Dismantle & Removal And Process/Purification Areas Below Grade Fill, 60% Draft
- 105-R Reactor Disassembly Basin Grout Placement Strategy, SRNL-TR-2009-00157, Rev 0 (In signature process), 8/6/09
- P Area Completion PEP, (Draft), 8/5/09
- R Area Completion PEP, (Draft), 8/5/09
- FY2009-FY2011 Baseline ACP CCL Project Number EMA32005, Work Breakdown Structure (WBS): 1.29.50.32.02.05, Control Account Title: P Area Operable Unit (AOU)

- FY2009-FY2011 Baseline ACP CCL Project Number EMA32003, WBS: 1.29.50.32.02.03, Control Account Title: RAOU
- Early Action Remedial Action Implementation Plan for the PAOU (U), WSRC-RP-2008-4072, 6/09
- Removal Site Evaluation Report/Engineering Evaluation/Cost Analysis (RSER/EE/CA) for the R-Reactor Building (105-R) Complex (U), SRNS-RP-2009-00801, 6/09
- RSER/EE/CA for Disposition of Water in the 105-P Disassembly Basin, V-ESR-00002, 3/08
- RSER/EE/CA for P-Area Process Sewer Lines as Abandoned (NBN) (U), SRNS-RP-2009-01046, Draft
- RSER/EE/CA for the R-Area Reactor Area Cask Car Railroad Tracks as Abandoned (U), WSRC-RP-2008-4090, 3/09

Due to the absence of a clear and concise scoping document, as well as the resulting inconsistencies in cost-and-schedule documents, P&RACPs cannot be validated at this time.

The EIR Team identified 1 major finding, 3 findings, and 1 positive observation.

1.2 Scope

The EIR Team assessed:

- Completeness of work scope definition including the extent to which definitions enable identification and quantification of risks.
- Appropriateness of major methods utilized to achieve results.
- Completeness of key assumptions, end-state vision, program and strategic initiatives, mission need, and key performance parameters, as well as validation methods.
- Adequacy of D&D activities and construction activities.
- Adequacy of soil, burial grounds, and groundwater remediation.
- Adequacy of technology development and adaptation.
- Demonstration of past performance adequate to support near-term baseline.

1.3 Discussion

Review of the Savannah River D&D of P and R reactors shows a great number of strengths within the Project Team, as well as some serious deficiencies in the level of maturity of Project Documentation. The Project Team is technically strong in regulatory issues and has been very successful in completing previous D&D projects at SRS. However, the Project Team has not had experience with capital projects requiring implementation of DOE O413.3A controls. Therefore, MFs and Fs have been noted requiring additional work prior to validation. One major area of concern, which translates into many other review areas, is that the Project does not have a central document with a clearly defined scope. The absence of this document translates into Fs in other areas where inadequate scope prevents production of clear coordinated cost-and-schedule documentation.

1.3.1 Work Scope Definition

The EIR Team evaluated the level-of-work scope definition to determine a rough order of magnitude percentage of completion. The EIR Team also reviewed the extent to which definitions of technical scope enable identification and quantification of risks. The Team determined that, although there is sufficient historical basis for the type of work being performed to allow for adequate scope definition, there has not been adequate time since initiation of the project for the scope to be clearly stated to provide the basis for detailed cost estimates and schedules. The Project Team members have made great strides toward definition of the scope, but they have not had adequate time to fully document and integrate all of the various designs and contracts required by this project. As a result, very few work packages are complete and issued, and there has not been integration of all of the scope elements

to ensure a comprehensive package. Many of the reference documents provided were alternative analyses with selected alternatives different from the scope described by the project staff during our discussions.

1.3.2 Major Methods Utilized to Achieve Results

The EIR Team evaluated appropriateness of major methods proposed to achieve results and determined that methods proposed for completing the work have substantial basis and appear appropriate for the D&D and Closure process. The Project Team is relying on experience of past D&D operations in design and planning the scope for this project. Therefore, approaches proposed in meetings during this EIR visit appear to have a substantial degree of credibility. However, there are a number of areas that have not yet had the scope defined to adequate depth to freeze the scope and prevent scope creep. There is general agreement on the high-level scope to be accomplished, but there are many unresolved details regarding which method is to be used to accomplish each task. When interviewing various members of the team, different answers were given pertaining to detailed methods of accomplishment, thus resulting in a perception that the scope is still fluid. There are a great number of tasks that have not yet been designed and integrated into a detailed schedule of the project. Documents reviewed contained differing methods to accomplish the work.

1.3.3 Project Assumptions and Drivers

In a review of the completeness of key assumptions, the EIR Team determined that (from a technical standpoint) methods proposed to accomplish the work and technical assumptions made appear reasonable. The end-state vision for the project is also at least 90% firm for the project; however, program and strategic initiatives appear to still be in a state of final proposal to the Regulators. Key performance parameters and validation methods are still in a state of flux and have not been fully documented by the Project Team and approved by the Regulators.

1.3.4 D&D and Construction Activities

The EIR Team reviewed the adequacy of D&D activities and construction activities to determine the risk of impact on project completion. The team looked at the support required to meet project requirements. There are a number of activities to be performed by the Site Facilities Organization that is precursor to completion of the project field activities. There is considerable project risk associated with the need for these activities to be completed on time. Construction activities, although straightforward, require a tremendous amount of personnel and equipment in a small area and in a short period of time. For these reasons, there is a high risk to project success that hinges on timely completion of Site Support Services precursor activities. See Basis of Schedule (Section 2 below) for more details on lack of integration of these activities into the Project Master Schedule.

1.3.5 Soil and Groundwater Remediation Activities

Based upon discussion of interactions with the Environmental Protection Agency (EPA) and South Carolina Department of Health and Environmental Control (SCDHEC) regulators, documentation submitted for their approval and documentation being prepared as the project progresses, the soil and groundwater remediation are adequate as addressed by this project. Ongoing reviews and reviews of documents submitted later as the project progresses could have a negative impact on requirements, cost, and schedule.

1.3.6 Technology Development and/or Adaptation

The EIR Team reviewed the status of grout design being performed by SRNL and determined that all grout mixes anticipated for use in the project are designed and tested—except for a dry mix that may (or may not) be required to stabilize residual water in the disassembly area basins at either R or P reactors. Although it is felt it may not be required, that will not be determined until late in execution of the project; for this reason, design and testing is continuing. At this time there appear to be no Development or Adaptation issues to impact project cost or schedule.

1.3.7 Past Performance

The EIR Team interviewed the current design leads and determined that the experience of this team is more than adequate in performance of past remediation projects to execute the design for this project.

1.4 Findings and Observations

The EIR Team identified 1 major finding, 3 findings, and 1 positive observation.

MF-1-1: The Project Scope is not adequately defined and documented to allow identification and quantification of risks.

Recommendation MF-1-1: Produce a document (or include in an existing document) a concise, well-defined scope that can be used as a basis for coordination within all other project documentation, such as cost and schedule.

F-1-1: Key Performance Parameters are not adequately defined and documented.

Recommendation F-1-1: Produce a list of Key Performance Parameters that clearly define successful completion of the project scope, and include it in the PEP.

F-1-2: The level of design completion is not adequate to support a CD 2/3 decision.

Recommendation F-1-2: Formalize a detailed design schedule that results in making a minimum of those design documents that define the major portion of the construction cost available for 60% review as soon as reasonable.

F-1-3: The WBS and WBS Dictionary are inadequately developed and defined.

Recommendation F-1-3: Develop a WBS dictionary that allows distinct project work packages to be identified and tracked.

O+1-1: The expertise of the Project Team in dealing with the regulatory requirements of this project is excellent.

2. BASIS OF SCHEDULE (AS DEFINED IN RLS)

2.1 Summary

The EIR Team interviewed the following personnel:

- Wade Whitaker, DOE AMCP FPD
- Ray Hannah, DOE Deputy Project Manager
- Rita Stubblefield, DOE Deputy Project Manager
- Chris Bergren, SRNS ACP Project Manager
- Tony Long, SRNS ACP, D&D Project Manager
- Ronald Socha, SRNS ACP, Project Lead
- Jeff Ross, SRNS ACP, Technical Lead
- Grant Cook, SRNS, Manager Site Estimating
- Seth Miller, SRNS, ACP Estimating
- Donna Kmetz, SRNS, ACP Project Controls

The EIR Team reviewed the following P&RACPs documents:

- P&R Milestone Schedule (draft)
- PAOU Baseline Schedule (draft)
- PAOU Working Schedule
- RAOU Baseline Schedule (draft)
- RAOU Working Schedule

These schedules are missing fundamental ingredients that are required to provide IPT with the information necessary to successfully manage these projects.

The EIR Team identified 3 major findings and 2 findings.

2.2 Scope

The EIR Team assessed:

- Consistency of integrated project schedule with the scope and cost estimate.
- Adequacy of detailed basis for the schedule duration.
- Reasonableness of key schedule assumptions.
- Consistency of Resource-Loaded Schedule (RLS) with the ARRA baseline.
- Reasonableness of schedule relative to the critical path and activity logic relationships.
- Appropriateness of schedule contingency for the risks recognized.

2.3 Discussion

The current baseline and working schedules lack necessary information required to properly and successfully manage P&RACPs. Major elements contributing to this deficiency are in the areas of critical path, task interfaces, and schedule contingency.

2.3.1 Schedule vs. Scope and Cost Estimate

Project scope is not completely identified (see Section 1.0 Technical Scope)—as a result, scope changes to the schedule are highly likely. RLS contains a WBS, which includes current scope. Current scope is quantified as dollars for subcontract scope and material, while man-hours represent the labor portion. Therefore, costs loaded in the schedule do not represent the total budget for the project. A cost-loaded WBS for each reactor has been extracted from the RLS and can be seen in Appendices B-1 and B-2. It appears that the WBS does not go to low enough levels to proportion the work into manageable sizes, as nearly 95% of cost is captured in 3 of 11 WBS elements for each project.

2.3.2 Schedule Duration Basis

The basis for establishing schedule durations includes an estimate in work-hours that represents a reasonable effort required to accomplish the work. Based on crew sizes—and physical space available to work in—establishing a reasonable duration for performing the work is accomplished. Durations established for activities highlighted in Appendix B- 3 do not appear to be reasonable based on the effort required to accomplish the work.

This particular circumstance is troubling, because these activities have *0* total float. Activities with *0* total float are candidates for critical path and near critical path work scope. It is especially important to have a high degree of confidence in activities on or nearly on the critical path. Confidence in durations established for these activities translates directly to overall confidence in the schedule; thus, establishing schedule contingency requirements.

2.3.3 Key Schedule Assumptions

Key schedule assumptions, such as general project approach and methodology, are generally found in a Basis-of-Schedule document—which does not exist.

Specifically, the basis of schedule should include such things as how calendars are being used and why, how resources have been allocated, and how updating the basis of schedule is accomplished. The purpose of a basis of schedule is to document and provide a rationale for fundamentals of the schedule.

2.3.4 RLS vs. ARRA Baseline

It is difficult to evaluate RLS compared to the ARRA baseline, since it is likely that project scope may change and potentially drive up near-term requirements for additional resources. Based on a review of the current baseline schedule, it appears that a significant build-up of personnel is required and perhaps not reasonable.

The histogram in Appendix B-4 illustrates labor units required according to the baseline plan. As mentioned earlier in this report, it was represented to the EIR Team that labor units in the RLS were in work-hours. It appears that the units in Appendix B-4 may be in work-months. Incremental value by month is scaled on the left *y* axis and accumulative is on the right *y* axis. As illustrated, it appears that a significant build-up of personnel is forecasted beginning in September 2009. This is a significant increase and would be subject for a more detailed review regarding feasibility.

2.3.5 Critical Path and Activity Logic Relationships

Critical path as represented in the baseline schedule for P Reactor can be found in Appendix B-5. A review of these activities reveals that they all have *0* total float which means that if any one of these activities slips one day, the project is delayed one day—without mitigation efforts. A closer look at these activities suggests that administration tasks are driving the project schedule, not the work. While this situation can occur, it is rare and usually not an acceptable circumstance. During the EIR review, the Project Team agreed that this was not representative of the true critical path, and that work related to closure of the disassembly basin was most likely the critical path on the project. Similar findings were also present on the R Reactor baseline schedule.

Activities not directly associated with the project scope are not present in the schedule. Tasks required for successful completion of the project work, such as mobilizing a batch plant or repairing RR tracks, are not present but should be logically tied to work activities and be an integral part of the schedule network. This will avoid missing a significant predecessor and its associated lead time.

2.3.6 Schedule Contingency

Schedule contingency is a duration of time on the critical path that has no scope. This time is preserved for actual events that take longer than anticipated to complete. Schedule contingency is a product of a risk analysis being performed on the scheduled activities.

There is no evidence of schedule risk analyses having been performed for these projects, and no schedule contingency exists.

2.4 Findings and Observations

The EIR Team identified 3 major findings and 2 findings.

MF-2-1: Important interfaces are missing from the schedule.

Recommendation MF-2-1: Add activities which the project depends on for success even if they are not part of the direct scope. These activities should include milestones included in the DOE CD process.

MF-2-2: A true critical path is not present in the schedule.

Recommendation MF-2-2: Include all activities required for successful completion with reasonable logic relationships and calculate new critical path.

MF-2-3: Schedule contingency is not included in the project baseline schedule.

Recommendation MF-2-1: Perform schedule risk analyses and use results to determine schedule contingency durations.

F-2-1: Some activity durations in the baseline schedule do not appear reasonable.

Recommendation F-2-1: Review scheduled activities for the purpose of comparing assigned durations with the estimated effort found in the estimate.

F-2-2: Basis of schedules, including assumptions, are not present.

Recommendation F-2-2: Develop basis of schedules, including approach and methodology considerations.

3. BASIS OF COST

3.1 Summary

The EIR Team interviewed the following personnel:

- Seth Miller, SRNS, ACP Estimating
- Donna K Metz, SRNS, ACP Projects Control
- Don Metcalf, SRNS, Project Controls
- Walter Wilson, Site Integration Manager
- Ben Lott, Site Integration, Analyst
- Randy McDanzels, Site Funds Management, Analyst

The EIR Team reviewed the following P&RACPs documents:

- FY2009 – FY2011 Baseline, Area Completion Projects (ACP), CCL Project Number EMA32003, WBS: 1.29.50.32.02.03, Control Account Title: PAOU, Control Account # - RAOU: 1.29.50.32.02.05, CAM: Ron Socha, undated (electronic file name ARRA FY09-11 R Area_Cost.pdf)
- FY2009 – FY2011 Baseline, Area Completion Projects (ACP), CCL Project Number EMA32003, WBS:1.29.50.32.02.03, Control Account Title: RAOU, Control Account # - RAOU: 1.29.50.32.02.03.01, CAM: Ron Socha, undated (electronic file name ARRA FY09-11 R Area_Cost.pdf)
- P Area Basis-of-estimate Roadmap (ARRA), PAOU (several spreadsheets provided during the site visit)
- R Area Basis-of-estimate Roadmap (ARRA), RAOU (several spreadsheets provided during the site visit)
- Most recent P&R areas cost estimate, 1/09
- Site markup documentation, FY2009 Distributions Sequencing
- Final FY2010 – FY2015 Common Occupational Classification System Burdened Rates, 6/11/09
- Rate Application Methodology Chart, 10/6/08

Current PAOU and RAOU cost estimates are outdated, contain indefensible costs, and include erroneous site adders. During the site visit, defendable P&RACPs TPC could not be determined. Current cost estimates contain site personnel wage rates for *self-perform* construction work, which is to be subcontracted now. Changes to the estimates were made by Project Controls, but additional costs were not reflected in the projects' baseline cost estimates. Revised P&RACPs scopes, including change from self-perform to subcontract work, do not have preliminary drawings and specifications to facilitate cost-estimate development and serve as precursors for bidding and contract award processes.

The EIR Team deems the cost estimate to be unverifiable.

The EIR Team identified 2 major findings, 1 finding, 2 negative observations, and 1 positive observation.

3.2 Scope

The EIR Team:

- Conducted an independent cost review of selected WBS elements.
- Assessed adequacy of the basis for the cost estimates including comparisons to parametric estimates and benchmark analyses.
- Assessed reasonableness of key cost assumptions.
- Assessed appropriateness of cost contingency for the risks recognized.
- Assessed consistency of project funding profile with RLS.
- Determined whether or not there is inappropriate classification of discrete work as level-of-effort work.
- Determined whether or not actual cost history is consistent with the near-term and life-cycle cost estimates.

3.3 Discussion

P&RACPs cost estimates are dated January 22, 2009, and contain costs from an escalated February 27, 2007, remediation cost estimate. Documentation received before the site visit showed site estimated baseline costs of $165.5M for PACP and $132M RACP. Fully-burdened baseline cost estimate backups contain baseline costs of $94.1M for PACP and $77.7M for RACP. No documentation or explanation was presented to support the discrepancy in these cost estimates. Scopes of work for these two projects were still uncertain—so these cost estimates are uncertain.

The following narrative is the P&RACPs Basis of Estimate applicable to the cost estimate, dated 1/22/09. WBSs associated with P&RACPs were insufficiently detailed to provide meaningful crosswalks to the cost estimates. Current P&RACPs cost estimates are not consistent with the EIR Team's current understanding of P&RACPs scopes.

During the EIR Team site visit, TEC, including site-wide markups (pension, essential site services (ESS), fee), but not including contingency, was provided to the EIR Team in two documents (spreadsheets) titled *P Area Basis-of-Estimate Roadmap (ARRA)* and *R Area Basis-of-Estimate Roadmap (ARRA)*. Both documents are dated 8/17/09. These were not included in the documents provided for review prior to the site visit, but they were prepared in an effort to clarify the Basis of Estimate documents. In addition, Basis of Estimate Roadmaps corrected inclusion of $24.3M of work scope for both projects incorrectly in the original Basis of Estimate for *Deactivation* (also referred to as *Cleanout*) work to be completed outside of the capital project.

Basis of Estimate Roadmaps contains the following TEC (without the *Deactivation* work scope or contingency/management reserve):

P Area	$147.691M
R Area	$135.966M
Total	**$283.657M**

Partial basis of estimates are contained in two confusing, hand-marked documents:

- FY2009 – FY2011 Baseline, Area Completion Projects (ACP), CCL Project Number EMA32003, WBS: 1.29.50.32.02.03, Control Account Title: PAOU, Control Account # - RAOU: 1.29.50.32.02.05, CAM: Ron Socha, undated (electronic file name ARRA FY09-11 R Area_Cost.pdf)
- FY2009 – FY2011 Baseline, Area Completion Projects (ACP), CCL Project Number EMA32003, WBS:1.29.50.32.02.03, Control Account Title: RAOU, Control Account # - RAOU: 1.29.50.32.02.03.01, CAM: Ron Socha, undated (electronic file name ARRA FY09-11 R Area_Cost.pdf)

Cost estimates proposed for baseline validation (performance baseline [i.e., TPC] and performance measurement baseline) for CD-2 approval must adhere to minimum standards for preparation and documentation of scope, cost, and schedule.

Cost estimates must be prepared in a clear, consistent, comprehensive format that facilitates review of details and assumptions throughout the cost estimate review process. Activities to be estimated shall be identified in sufficient detail to support cost estimate methodology used. Estimate details must clearly indicate the productivity factor used and actual unit rates from site database. Cost estimates must have backup documentation in a centrally located program file that explains assumptions and calculations upon which the estimate is based.

Development of activities is driven by project scope. Defining an activity includes the concept that it is a measurable unit of work. Necessary elements for activity definition are that the activity components are measurable and defined in terms of work output—and not in labor hours to perform. Each activity needs to have an identifiable unit of measure, as well as (if appropriate) discrete quantities associated with that activity. ACPs' cost documentation was thoroughly reviewed in order to determine its compliance with reasonable estimating standards and to render an opinion regarding the validity of the proposed baseline.

Total direct cost of P&RACPs is estimated to be $140.230M (see Roadmaps). Only $81.597M of this total is contained in a verifiable, well-documented cost estimate basis. The remaining $58.633M is contained in a contradictory, poorly documented, and unsupportable cost estimate basis—42% of total estimated direct cost.

The EIR Team concluded that the cost estimates for P&RACPs, as a whole, were unverifiable.

3.3.1 Independent Cost Review

Detailed construction cost estimate (direct cost) is verifiable using standard estimating techniques. However, large portions of the estimate are not verifiable due to a lack of scope description and reference to documents that were not available to the EIR Team (e.g., PAOU Final Remediation Action Cost Estimates from February 2007).

General construction portions of the cost estimates, approximately $75M (22.7% of the P&RACPs), are adequately defined and were reviewed in the EIR drilldown. Corresponding WBS element numbers are:

- 01.29.50.32.02.05.02 PAOU
- 01.29.50.32.02.03.01 RAOU

Lack of drawings, specifications, and definitive project scope precluded the EIR Team from developing a check estimate and cost variance for P&RACPs. The EIR Team did an in-depth review of the estimate methodology and construction unit costs, but material quantities and man-hour takeoffs could not be verified.

Tables in Appendix C contain the EIR Team review of PAOU and RAOU costs, noting adequacy of estimate basis. These cost estimates were provided to the EIR Team during the site visit to help clarify scope and cost.

All project costs for which the primary cost estimate format is reporting of resource hours and lump sum costs should be re-estimated using an integrated cost estimating system and methodology, such that scope is clearly tied to resource unit and production rates, labor productivity factors, and basis of quantities in a well-documented cost estimate document.

General construction portions of the cost estimate for the P&RACPs (approximately 25%) is acceptable under the scope shown in the Basis of Estimate documentation.

The revised cost estimate should include all costs associated with the P&RACPs. Specifically, the cost estimate should contain, if applicable, actual costs thru July, pre-construction support, work by others, site personnel construction work, government-furnished equipment (including quotes), site equipment (use, time, costs), engineering (site and subcontracted), project support (site and subcontracted), subcontracted construction work, individual work area productivity factors, escalation, and all current site adders/markups and contingency, as well as management reserve costs to support the project funding profile, spend plan, and project schedule.

P&RACPs cost estimates are not acceptable.

3.3.2 Cost Estimate Basis

The cost estimate contains a basis relevant to the January 2009 proposed project scope. As stated in this EIR Report, Section 1, Technical Scope (above), the current scope is not adequately defined.

Portions of the basis of estimate refer to the total ARRA project. Current scopes of P&RACPs are not defined, and the cost estimate (dated January 2009) is not based on the proposed scope and current applicable site markups.

The following project cost site adders were presented by site integration personnel to the EIR Team during the site visit. Table 3-1 reveals a major discrepancy in development of the cost estimate.

Table 3-1. Evaluation of Site Adders – Cost Estimate vs. Current

Site Adders/Markups	January 2009 Cost Estimate	Documentation/ EIR Team Visit Information
Escalation	3.3%	3.8% and 3.0%
Subcontract Surcharge	3.0%	2.3%
Direct Distribution	0%	(09)22.54%, (10)20%, (11)20%
Pension	0%	(09)30.52%, (10)56%, (11)25%
ESS	14.23%	(09)10.07%, (10)8%, (11)9%
G&A	9.65%	(09)7.25%, (10)6%, (11)6%
Fee	(09)5.55%, (10&11)6.25%	(09)7.79%, (10)8%, (11)8%
Contingency	10%	13.8%
LOE Work	3.0% & 3.8%	4%

Note: Evaluation of site adders/markups additions and increases revealed a probable increase in the January 2009 cost estimate.

P&RACPs basis of cost estimates are not acceptable. Consequently, current P&RACPs baseline cost estimates are not valid.

3.3.3 Key Cost Assumptions

The following assumptions and uncertainties are associated with the January 2009 P&RACPs cost estimate.

PACP Assumptions:

- Waste unit remediation can be performed under EE/CAs, and regulators accept streamlined regulatory strategy.
- Slit trenches are available for low-level waste disposal.
- Site Infrastructure constructs batch plant in time to support grouting activities.

PACP Uncertainties:

- Comprehensive documentation required by regulators to perform major D&D/Remediation (schedule impact).
- Inability to use slit trenches for low-level waste disposal.
- Inability to secure personnel to perform scopes of work.
- Inability to procure equipment and subcontractors in a timely manner.
- Public intervention.
- Funding constraints.

RACP Assumptions:

- Waste unit remediation and 105-R decommissioning can be performed under CERCLA Engineering Evaluations/Cost Analysis (EE/CAs).
- No wetland permits are required for remediation.
- No contaminates other than cesium-137 are present in wetland.
- Procurements are issued and awarded on schedule.
- Slit trenches are available for low-level waste disposal.
- Site infrastructure completes batch plan construction on schedule.

RACP Uncertainties:

- Comprehensive documentation required by regulators to perform major D&D/remediation (schedule impact).
- Inability of contractor to secure personnel to perform scopes of work.
- Inability to procure equipment and subcontractors in a timely manner.
- Public intervention.
- Funding constraints.
- Inability to use slit trenches for low-level waste disposal.

Cost assumptions are available for the defined construction estimate, but are missing for estimates taken from prior estimates. All assumptions should be listed in the Basis of Estimate for all major elements of the estimate (e.g., PAOU Final Remediation Action).

Project assumptions and uncertainties may or may not be viable under the estimated project scope and updated project cost estimate.

Project documentation contains assumptions not relevant solely to the P&RACPs and is not acceptable.

3.3.4 Cost Contingency

DOE-controlled contingency is derived from a project Monte Carlo analysis that raises the confidence level of completing the project at or below the baseline estimate to 80%. The FPD administers DOE-controlled contingency. Any transfers of DOE-controlled contingency are through formal change control.

A total ARRA Project cost contingency figure was generated using the Monte Carlo methodology presented in documentation. A Monte Carlo analysis was performed on residual risks using Crystal Ball™ software. Table 4.2.1 in the project documentation shows 50% and 80% confidence levels for Tier 1 risks, Tier 1 sum, Tier 2 aggregates, as well as the total.

ARRA scope in general is a low technical risk. High and moderate risks indicated are primarily due to the short ARRA timeframe and are driven by potential schedule delays.

Recurring risk themes were observed in Tier 2 assessments:

- Regulator interface risks (documentation, separation of activities, timely decisions) (22 risks).
- Lack of mechanical resources (14 risks).
- Lack of critical skills due to retirement/death (12 risks).
- Discovery of new waste (contaminated soil, etc.) (11 risks).
- Public Interventions – stakeholders disagree with course of action (7 risks).
- Material control and accountability issues (5 risks).
- Availability of specialty equipment (4 risks).

With a contingency of 13.8% of the total, the total ARRA Project is starting off with moderate risk. High demands on equipment, regulatory interfaces, new waste discovery, and critical skill loss show areas which require particular management attention for this project to be successful. The large number and diversity of projects also may strain site resources (procurement, quality assurance (QA), estimating, radiation control, medical, and environmental compliance).

During the site visit, the EIR Team was told that contingencies were $21.67M for PACP and $21.6M for RACP, but no documentation was received to substantiate the allocations.

The cost estimate contained a 10% contingency factor, and contingency analysis developed a 13.8% factor. The EIR Team believes that both contingency factors are low for environmental cleanup work. Contingency should be recalculated for both P&RACPs after risk analyses have been conducted.

Contingency factor and costs are not acceptable.

3.3.5 Consistency of Project Funding Profile

Documentation provided to the EIR Team contained ARRA Project Cost and Funding Profile (shown in Table 3-2).

Table 3-2. ARRA Project – Cost and Funding Profile ($ millions)

B&R	Scope	2009	2010	2011	Total
FD0511000	SRS D&D P&R Area Completion	48	194	174	416
FD0512000	SRS D&D M&D Area Completion	11	128	12	151
FD0513000	SRS D&D Soil & Ground Water	62	262	195	519
FD0530000	SRS TRU & SW Materials Disposition	93	239	198	530
Total ($M)		**214**	**822**	**579**	**1,615**

This Profile contains $416M for D&D of P&RACPs; however, cost is not supported by P&RACPs documentation and project cost estimates provided to the EIR Team.

The EIR Team extracted funding profiles for P&RACPs from cost estimate documentation provided by the Project Team (electronic files named "ARRA FY09-11 P Area_Cost.pdf" and "ARRA FY09-11 R Area_Cost.pdf"). Totals of these funding profiles, shown in Table 3-3, don't match other cost estimate totals for the projects, and they do not contain management reserve and contingency.

Table 3-3. January 2009 P&RACPs Funding Profiles ($ millions)

Project	2009	2010	2011	Total
PACP	9.9	79.4	76.2	**165.5**
RACP	3.2	49.0	80.2	**132.4**
Total ($M)	**13.1**	**128.4**	**156.4**	**297.9**

Acceptable P&RACPs funding profiles cannot be created until scopes of work, schedules, and cost estimates are completed for each project. Funding profiles in the two tables above are not consistent with the EIR Team's current understanding of the scopes, schedules, and cost estimates for P&RACPs.

3.3.6 Level-of-Effort Work

SRNS developed average planning rates for Common Occupational Classification System codes by segregating all SRNS employees into approximately 80 resource types and averaging their salaries. FY2010 and FY2011 labor was escalated by 3.8% for exempt and 3.0% for non-exempt and craft. FY2012 through FY2015 labor was escalated by 4.0% for exempt and 3.0% for non-exempt and craft. Material and subcontract cost were escalated by 2.3% for each year starting in FY2010 and going through FY2015.

The EIR Team received documentation from SRNS finance personnel documenting a 4% per year escalation for site craft personnel. The current scope is for subcontract workers; therefore, the cost estimate should contain contractor craft wage rates commensurate with SRS Site Davis-Bacon Act or union agreements.

When all elements of the detailed construction estimate are defined and referenced in the Basis of Estimate, level-of-effort elements can then be analyzed. Until appropriate documentation is provided to the EIR Team, classification of level-of-effort work is not acceptable.

3.3.7 Cost History

Documentation received before the on-site visit revealed site estimated baseline costs of $165.5M for PACP and $132M for RACP. Fully burdened baseline cost estimate backups contain costs of $94.1M for PACP and $77.7M for RACP. No documentation or explanation was presented to support discrepancy in documentation or cost estimates.

Neither of the documented cost estimates received before the site visit reflected costs presented during the site visit. The cost estimate contained fully-burdened costs; but without a definitive project scope, costs are questionable. Cost history with near-term project life-cycle estimates can be performed when a complete detailed estimate is assembled.

Cost history is not evident or consistent in the cost estimate and is not acceptable.

3.4 Findings and Observations

The EIR Team identified 2 major findings, 1 finding, 2 negative observations, and 1 positive observation.

MF-3-1: Several major activities in the cost estimate, principally waste unit remediation, do not have basis for man-hours and dollars.

Recommendation MF-3-1: The P&RACPs PAOU Final Remediation Action cost estimate, dated February 27, 2007, should be updated and revised to reflect the new scope, applicable wage rates, current site adders, and acquisition strategy.

MF-3-2: The cost estimate is based on **self-performing** project design and construction services, whereas the current acquisition strategy is to **subcontract** the majority of work scope.

Recommendation MF-3-2: Current scope is for subcontract workers; therefore, the cost estimate should contain contractor craft wage rates applicable with SRS Site Davis-Bacon Act or union agreements.

F-3-1: The cost estimate is not a current bottoms-up estimate. Project scope is in revision, and the cost estimate does not reflect the proposed changes.

Recommendation F-3-1: The P&RACPs cost estimate, dated January 22, 2009, (including an escalated February 27, 2007, remediation cost estimate) should be updated and revised to reflect the new scope, applicable wage rates, current site adders, and acquisition strategy, as well as other specific elements identified in Section 3.3.1.

O-3-1: The current cost estimate contains site personnel wage rates for the self-perform construction work.

Recommendation O-3-1: The revised cost estimate should reflect the Davis-Bacon Act and/or area union wage rates for current subcontracted scope of construction work.

O-3-2: Preliminary drawings and specifications are not available to facilitate validation of the P&RACPs cost estimate and project funding profiles.

Recommendation O-3-2: Provide drawings and specifications to ensure a reliable bottoms-up cost estimate and precursor to support the subcontracted competitive bidding environment and to facilitate contract award process.

O+3-1: The general construction (decommissioning) portion of the estimate is well-prepared and acceptable with respect to methodology, rationale, and traceability.

4. RISKS MANAGEMENT

4.1 Summary

The EIR Team interviewed the following personnel:

- Wade Whitaker, DOE AMCP FPD
- Chris Bergren, SRNS ACP Project Manager
- Tony Long, SRNS ACP, D&D Project Manager
- Joe Krupa, SRNS Systems Engineering, Risk Management Subject Matter Expert
- Don McCullough, SRNS Systems Engineering, ARRA Risk Management
- Subhash Sethi, SRNS Systems Engineering
- Gary Howard, DOE/SR Risk Management
- Candice Freeman, DOE/SR AMCP

- Latrincy Whitehurst, DOE/SR AMCP
- Holt Moran, SRNS

The EIR Team reviewed the following P&RACPs documents:

- *ARRA Risk Management Master Plan*, SRNS Document No. Y-RMP-G-00013, Rev. 0, 6/18/09
- *Risk Management for Area Completion Projects*, SRNS Administrative Procedure ER-AP-177, Rev. 2, 3/9/09
- *Project Risk and Opportunity Analysis*, SRNS Manual E11, Procedure 2.62, Rev. 10, 3/23/09
- *ARRA Risk Summary and Contingency Analysis Report*, SRNS Document No. Y-RAR-G-00025, Rev. 0, 7/7/09, unapproved.

There are no project-specific risk management plans or assessments for the PACP or the RACP. As a result, quantified potential impacts on those projects have not been determined for inclusion of contingency in their cost-and-schedule baselines.

The EIR Team identified 1 major finding, 1 negative observation, and 1 neutral observation.

4.2 Scope

The EIR Team assessed whether or not:

- Project risks were properly identified, defined, analyzed, and prioritized.
- Risks were classified (high, medium, low) and quantified (probability and consequence).
- Avoidance and mitigation efforts were accounted for as management reserve in project baseline.
- DOE risks were analyzed and accounted for as contingency in project baseline.
- Both management reserve and contingency were based on quantitative risk analyses, and provided appropriate levels of confidence.

4.3 Discussion

A crosscutting Risk Management Plan and a Risk Assessment Report exist for the total SRS ARRA Project. However, project-specific Risk Management Plans and Assessment Reports do not exist for P&RACPs as of the beginning of the EIR Team site visit. ARRA-level risk opportunity assessment identifies risks, opportunities for and potential impacts in the form of Tier 1 and Tier 2 risks, and opportunities that may affect P&RACPs. Tier 1 (upper-level assessment) risk opportunities pertain to DOE and SRNS. Tier 2 (aggregate level assessment) risk opportunities pertain to aggregates of similar and associated work increments. However, there was insufficient information in ARRA Tier 1 and Tier 2 assessments to determine a complete set of quantified potential impacts on P&RACPs for inclusion of contingency in corresponding P&RACPs cost-and-schedule baselines.

The *ARRA Risk Management Master Plan,* in combination with *Risk Management for Area Completion Projects* and *Project Risk and Opportunity Analysis,* provides a comprehensive set of requirements and guidelines that should be followed during preparation of risk management plans and assessments for P&RACPs. Complete, stand-alone risk management plans may not be necessary for P&RACPs. A more summary document that refers to higher-level requirements documents and how those documents are applied to P&RACPs may be sufficient. However, thorough risk assessment is required for each project.

It should be noted that the *ARRA Risk Management Master Plan* is unclear regarding identification of the value (cost) of schedule contingency. This Plan should be updated to require identification of the cost of schedule contingency (i.e., the value of the project hotel load that will be incurred if schedule contingency is used) for inclusion in the total cost contingency calculation. Administrative Procedure ER-AP-177 *Risk Management for Area Completion Projects* does address this requirement.

Missing elements of a comprehensive risk management process for P&RACPs are specified in the ARRA level documents and include:

- Risk and opportunity screening forms, register, log, status chart, and monthly and quarterly updates.
- Consideration of all project and pertinent ARRA assumptions and uncertainties.
- Programmatic, characterization, design, and construction risk analysis, handling, and impact determination.
- Potential effects on the projects of risks from non-project predecessor activities, e.g., impacted site systems, technology development.
- Sufficient emphasis on identifying mitigation activities.
- Inclusion of cost-and-schedule mitigation and recovery activities in baselines.
- Determination of cost-and-schedule management reserve and contingency from technical and programmatic risk.
- Contribution of technical and programmatic risk, estimate uncertainty, and value of schedule contingency to performance baselines (schedule and TPC).
- Methodology for organizational allocation and control of management reserve and contingency.

4.3.1 Project Risk Identification

Since there are no project-specific risk assessments for P&RACPs, identification of project-specific risks is incomplete. Preparation of project-specific risk assessments should consider Tier 1 and Tier 2 risks and associated potential impacts on P&RACPs, but project-specific risks need to be identified and assessed with potential impacts addressed by appropriate management reserve and contingency. All project and pertinent ARRA level assumptions and uncertainties need to be considered, and associated risks need to be screened for each project. Also, project-specific risk and opportunity screening forms, registers, logs, status charts, and monthly and quarterly updates need to be prepared and maintained

One potential event regarding pension rates that could be a risk or an opportunity relative to actual schedule performance should be analyzed. Potential effects of the 31 percentage points delta in pension overhead between FY2010 and FY2011 has not been addressed. Pension rates in FY2010 and FY2011 are 56% and 25% respectively. If different amounts of work are completed in FY2010 and FY2011 than planned in the baseline, actual FY2010 and FY2011 costs could change significantly because of significantly different pension markup rates in the two years.

4.3.2 Risk Classification

The *ARRA Risk Summary and Contingency Analysis Report* qualitatively and quantitatively classifies Tier 1 and Tier 2 risks both before and after implementation of handling actions. That report also provides risk summaries and assessment forms for Tier 1 and Tier 2 risks and opportunities. Assessment forms provide a complete set of attributes for each risk analyzed. However, project-specific analysis and handling, as well as impact determination for programmatic, characterization, design, and construction risks, including non-project predecessor activities (e.g., impacted site systems, technology development), were not conducted for P&RACPs.

4.3.3 Avoidance and Mitigation Efforts

The *ARRA Risk Summary and Contingency Analysis Report* analyzed risks and opportunities in five areas that could impact P&RACPs:

- Tier 1 Summary
- P and R Area Impacted Site Systems (ISS)
- P and R Area Completion Summary
- Area Completion, Technology Development Summary

- Environment, Safety, Health, and QA Summary

These five areas contained 33 high and moderate risks before handling actions. Avoidance, transfer, and mitigation actions reduced 7 of the high and moderate risks to lower category risks. The remaining 26 risks (7 high and 19 moderate) were accepted. Risk analysis for P&RACPs should endeavor to identify a higher percentage of project-specific avoidance, transfer, and mitigation actions to minimize overall residual risk for the projects.

Since scope, schedule, and cost baselines are incomplete for P&RACPs, the EIR Team could not determine the extent to which cost-and-schedule mitigation and recovery activities are included in the baselines.

4.3.4 Risk Contingency in Project Baselines

Since scope, schedule, and cost baselines are incomplete for these projects, the EIR Team could not determine to what extent risk management reserve and contingency (estimate uncertainty, value of schedule contingency, and technical and programmatic risk contingency) pertinent to P&RACPs are included in the baselines.

4.3.5 Management Reserve and Contingency Basis

The *ARRA Risk Summary and Contingency Analysis Report* states that a Monte Carlo analysis was performed on residual risks using Crystal Ball™ software. That report also provides a summary table of the 50% and 80% confidence levels cost contingencies for Tier 1 risks, Tier 1 summary, and Tier 2 aggregates for a total of $221.2M ARRA cost contingency. The EIR Team was not shown how the calculations were performed or how the three elements of cost contingency (estimate uncertainty, value of schedule contingency, and technical and programmatic risk contingency) were combined. Furthermore, no such calculations have been performed for P&RACPs, since project-specific risk analyses have not been performed.

4.4 Findings and Observations

The EIR Team identified 1 major finding, 1 negative observation, and 1 neutral observation.

MF-4-1: P&RACPs do not have project-specific risk management and assessment documents or demonstration of risk monitoring.

Recommendation MF-4-1: Prepare project-specific risk management plans and risk assessments; monitor and manage risks for P&RACPs in accordance with SRS processes and procedures.

O-4-1: The *ARRA Risk Management Master Plan* is unclear on the identification of the value (cost) of schedule contingency.

Recommendation O-4-1: The *ARRA Risk Management Master Plan* should be updated to require identification of the cost of schedule contingency (i.e., the value of the project hotel load that will be incurred if schedule contingency is used) for inclusion in the total cost contingency calculation.

O~4-2: Potential effects of the 31% points delta in pension overhead between FY2010 and FY2011 could cause actual FY2010 and FY2011 costs to change significantly if different amounts of work are completed in FY2010 and FY2011 compared to the baseline workload.

5. PROJECT MANAGEMENT

5.1 Summary

The EIR Team interviewed the following personnel:

- Wade Whitaker, P&RACPs FPD

- Ray Hannah, PACP Deputy FPD
- Rita Stubblefield, RACP Deputy FPD
- Chris Bergren, SRNS P&RACPs Project Manager
- Donna Kmetz, SRNS P&RACPs Project Controls
- Tony Long, SRNS Cost Account Manager
- Ron Socha, SRNS Cost Account Manager

The EIR Team reviewed the following P&RACPs documents:

- P&RACPs Federal IPT Charter- Draft, 8/09
- P Area Completion PEP- Draft, 8/5/09
- R Area Completion PEP- Draft, 8/5/09
- PEP for ARRA Project, V-PEP-G-00004 Revision F, 7/20/09
- Team Execution Plan (TEP) for ARRA Project, Area Completion Projects, V-PEP-G-0005 Revision A, 6/2/09
- SRS ARRA Executive Summary (WBS 1.29.50), 7/7/09
- FY2009-FY2011 Baseline, ACP, CCL Project Number EMA32005, WBS: 1.29.50.32.02.05, Control Account Title: PAOU, undated
- FY2009-FY2011 Baseline, ACP, CCL Project Number EMA32003, WBS: 1.29.50.32.02.03, Control Account Title: RAOU, undated
- EM RAP Portfolio Management Framework, RAPD-EM-09004 Revision 0, 7/10/09
- EM RAP Independent Project Review Report for Savannah River, 8/10/09
- Master EM Project Definition Rating Index (PDRI) for PAOU, undated
- Master EM PDRI for RAOU, undated
- RAOU Closure Strategy Package, ERD-EN-2009-0046, 5/18/09
- Performance Evaluation and Management Plan Supplement, ARRA, undated
- Recovery Program Management Plan- Draft E, 6/17/09
- Project Operating Plan SRS D&D P&R Areas RAP- Draft, undated
- EM, Monthly Review for April 2009, SROO RAPs
- EM, Monthly Review for April 2009, SROO RAPs
- Modification A024, DE-AC09-08SR22470
- PDRI Manual, EM-PDRI Manual, Rev. 1, 2/01

The EIR Team determined that management plans have not been reviewed and approved at the site level; that work is proceeding without Acquisition Executive approval; and that Federal and Contractor Project Teams have not integrated DOE O413.3A requirements into the project.

The EIR Team identified 3 major findings, 7 findings, and 8 negative observations.

5.2 Scope

The EIR Team:

- Assessed whether or not management plans were valid, credible, and appropriate for this type of project/operation.

- Assessed whether or not execution planning and staffing were adequate and consistent with DOE requirements/guidance.
- Assessed whether or not organization and staffing plans/levels were adequate and whether or not appropriate disciplines were included in IPT.
- Determined if there were any deficiencies in the IPT that could hinder successful execution of the project.
- Assessed adequacy of management controls, processes, procedures, responsibilities, authorities, and reporting.
- Assessed adequacy and completeness of acquisition strategies and plans *[Publicly available versions].*
- Assessed adequacy of performance management (e.g., achievement of performance metrics).
- Assessed adequacy of the Project Definition Rating Index.
- Reviewed results of ARRA Independent Project Review.
- Reviewed the Base Recovery Act Template requirements (change requests, period of performance, funding profile, baseline change requests/ baseline change proposals, final contract modification, etc.) for completeness and adequacy.

5.3 Discussion

5.3.1 Management Plans

Prior to ARRA, P&RACPs were managed as operational subprojects under PBS 0030, ACP, and funded as part of the National Defense Authorization Act. PBS 0030, as well as all other PBSs at SRS, are included in the 2008 SRS Environmental Management Program PEP.

Upon funding of the ARRA project, which included pulling P&RACPs from the out-year budget to near-term baseline execution, SR was directed to plan and execute individual projects for the P and RAOUs. Additionally, EM's RAP Portfolio Management Framework, dated July 10, 2009, and approved on July 14, 2009, by the Assistant Secretary for EM, 8 days after the SRNS ARRA Baseline package was submitted to DOE according to SRNS. While transitioning from the National Defense Authorization Act funding to ARRA funding, converting out-year planning packages to near-term execution, and implementing EM's RAP Portfolio Management Framework, SR was directed to start managing certain portions of P and RAOUs as capital asset projects—instead of operating projects as stated in the 2008 PEP. EM also directed that project baselines must be established and approved by the end of FY2009. Convergence of all these requirements has created a high risk of inadequate baseline planning. The EIR Team believes that this short time frame is a risk as evidenced by the EIR Team's major findings and findings throughout this report.

Initial submittal of documents to the EIR Team included a Program-level PEP specific to the entire portfolio of ARRA projects that includes P&RACPs, as well as other ACPs and ARRA-funded operation activities and projects. Just prior to the site visit, and subsequent to a joint teleconference with the EIR Team and SR site personnel, project-specific PEPs were prepared for the P&RACPs. These documents are very rudimentary and have not been fully developed. Major deficiencies include:

- Project-specific summary-level cost data was not included.
- Scope descriptions were not consistent with information presented during the onsite review.
- Key performance parameter validation methods were not described.
- The PEP has not been reviewed by IPT.
- A summary of risks was not provided.
- A summary of project-specific safeguards and security (S&S) planning was not provided.
- Change control approval thresholds have not been summarized.

- PEPs are not approved. Approval authority is shown as the Assistant Secretary, yet a delegation memo exists that delegates PEP/IPT approval to the Deputy Assistant Secretary.
- A Federal project staffing plan was not in this document or the IPT charter.
- Project-specific transitioning planning was not included in the PEP.
- Project-specific reporting requirements were not stated.

A draft IPT Charter for P&RACPs was also provided. This document has not been reviewed by IPT. P/RACP's IPT is substantially the same team that has been functioning at the Program level for some time. The IPT member relationships and processes are functioning and mature in that respect. The IPT charter needs to be finalized and forwarded with the CD approval package for approval.

A draft PEP for the ARRA project, V-PEP-G-00004 Revision F, July 20, 2009, has been prepared by the Contractor, SRNS. This document covers the entire scope of ARRA funded work including all capital asset and operations activities funded by ARRA. The document is very detailed and appears appropriate for the complexity and scope of the project. This document should be finalized and approved.

A draft TEP for the ACPs has also been drafted for team review. This document covers all Area Completion projects including P&RACPs. This document also needs to be finalized and approved.

5.3.2 Execution Planning and Staffing

The EIR Team concludes that current staffing levels are appropriate for the project phase. The Deputy FPDs are the key Federal personnel in oversight of the day-to-day Contractor activities and interface with the regulators and public stakeholders. These two individuals demonstrate they are well-qualified, experienced, and highly motivated to complete the project successfully. The FPD stated that he has not evaluated future staffing needs relative to the proposed baseline schedule and scope. The SRNS staff that participated in the EIR review also exhibited the knowledge, technical experience, and dedication required to successfully execute the project. The one significant deficiency in both organizations is the failure to incorporate DOE413.A requirements into the proposed baselines.

An evaluation of current and planned Federal staffing levels relative to the DOE Root Cause Analysis Contract and Project Management (July 2008) corrective measure staffing algorithm will be communicated separately to OECM after the FPD prepares the staffing plan.

5.3.3 Organization and Staffing Plans

Key individuals in IPT are the Deputy FPDs. These individuals have been with these projects for a significant length of time. They have complementary expertise in D&D and Soil and Groundwater Remediation. FPD states that all his staffing requests have been promptly addressed and fulfilled by the matrix organizations currently serving on IPT. IPT does have access to staff augmentation contracts to address staffing needs, if appropriate and required.

5.3.4 Integrated Project Team

There are no specific deficiencies identified in the current IPT. However, it is noted that the IPT is accountable for significant deficiencies in the CD-2 submittal package. The IPT should self assess its performance to identify any qualifications or process deficiencies and corrective actions including training, mentoring and member augmentation or replacement. The IPT Charter needs to be finalized, approved, and implemented.

5.3.5 Management Controls, Processes, Procedures, Responsibilities, Authorities, and Reporting

Both SRNS and the Federal IPT have documented change-control processes and procedures. SRNS also has well-documented work processes and procedures. The Project Team responsibilities and authorities should be fully delineated in the IPT Charter, PEP, and ACP TEP.

Although both the Federal and Contractor processes and procedures presented in the various management documents appropriately reference DOE O 413.3A, the project has proceeded with field work and subcontract awards without appropriate Acquisition Executive approval. During the onsite review, it was determined that grouting in the R area disassembly basin was underway, and that this work was being performed as a proof-of–principle task. This is indeed an appropriate task to conduct during the engineering phase, if required. However, this work is shown under the decommissioning WBS and not under the engineering WBS. Also, field work has commenced in the ash basin, and a contract has been awarded for the cask car railroad track waste unit remediation task. These tasks are legitimate field work properly shown under the decommissioning WBS as part of project capital asset scope. Nevertheless, these tasks should receive Acquisition Executive approval prior to performing work or awarding contracts.

Project reporting will include specific ARRA Program monthly project reporting requirements, including project performance, status, and issues. SRNS will also prepare monthly reporting data for the DOE Integrated Planning, Accountability, and Budgeting System; Project Assessment and Reporting System; and the Recovery Act web site.

5.3.6 Acquisition Strategies and Plans

The EM acquisition strategy is to perform this work through the existing management and operating (M&O) prime contract. This acquisition strategy appears the best alternative for accomplishing this work, especially given the management goal to spend out funds as quickly as possible. The M&O contractor, SRNS, has determined that the majority of work will be subcontracted. The project cost-and-schedule baselines are based on self-performing all of the project scope. This inconsistency is a significant deficiency in the proposed baselines and is further addressed elsewhere in this report.

5.3.7 Performance Management

The SRNS EVMS system underwent a compliance review by OECM in June 2009. This review identified nine deficiencies that must be corrected prior to certification as an ANSI/EIA-748 compliant EVMS system. CAPs have been developed, and current planning is to complete these corrective actions and receive certification prior to the end of FY2009.

The EIR Team onsite review revealed that the baseline schedule will include subcontractor dollar values for subcontracted work packages and labor resources man-hours for SRNS personnel. The baseline schedule will not include SRNS labor dollars. Dollar values will be assigned to resources by the Cost Processor used by SRNS. In order for IPT to maintain an auditable baseline document, it is recommended that both the native baseline schedule file and the monthly budgeted cost-of-work scheduled (BCWS) over the life of the projects generated by the Cost Processor be submitted to IPT upon approval of the CD-2 baselines. This data will provide the baseline data to validate monthly EVMS data and a data base to evaluate any baseline change proposals that affect BCWS. Given the nature of the compliance review findings and that the Cost Processor process for producing EVMS data was not observed or validated by the EIR Team, IPT should place the EVMS process under close surveillance for some time period after baseline approval.

5.3.8 Project Definition Rating Index (PDRI)

A PDRI was prepared by the respective Deputy FPD for the P&RACPs. A PDRI is a management tool to assess project readiness to proceed to the next phase. The Office of Environmental Management, through the EM Office of Project Management, has issued a manual, EM-PDRI Manual, Rev. 1, February 2001 to guide the preparation of project specific PDRIs for EM projects.

The rating by the Federal Project Team indicates a misunderstanding of guidance in the EM-PDRI manual for Capital Asset Projects and possibly another indicator of lack of understanding of DOE O 413.3A requirements. This evaluation provides a strong indication the Federal Project Team needs additional training relative to the EM PDRI manual and DOE O 413.3A requirements.

5.3.9 ARRA Independent Project Reviews

An Independent Project Review was conducted for most of the SR ARRA project. The review did not cover the P&RACPs. The Independent Project Review was conducted by the EM Office of Strategic Planning (EM-32) during the week of July 27, 2009. The review covered the balance of ARRA project's 17 capital assets and operating projects. The Independent Project Review goal was to objectively determine reasonableness of the proposed schedule and cost to implement project scopes, and whether management controls and reporting were appropriate and consistent with implementation plans, DOE O 413.3A, and EM's RAP Portfolio Management Framework requirements and guidance.

The Independent Project Review identified four findings requiring correction prior to approval of baselines. These were: *schedule*—lack of detail and integration; *risk*—identify project specific risks and develop more appropriate handling strategies; *EVMS*—performing work and awarding procurement from a summary planning package and data inconsistencies across various reporting documents; and *documentation*—revision and approval of management and planning documents. The Independent Project Review also identified 58 observations.

There were some general correlations between findings and observations of the Independent Project Review and this EIR. However, the EIR Team determined that there were significant deficiencies in preparation of P&RACPs baseline documents and in understanding and incorporating DOE O 413.3A planning requirements by both the Federal and contractor Project Teams.

5.3.10 Base Recovery Act Template

Acquisition of the Recovery Act requirements at SR has been accomplished by issuance of a Contract Modification to the existing M&O contract with SRNS. This contract modification, Modification A024, was executed on 4/8/09 and incorporated the entire scope of ARRA requirements, including P&RACPs. The Project Operating Plan, Identification Code 2002150, *Savannah River Site D&D P & R Areas Recovery Act Project*, is in draft form and is specific to P&RACPs. This document will need to be revised and completed upon final completion of the proposed baselines for these projects.

5.4 Findings and Observations

The EIR Team identified 3 major findings, 7 findings, and 8 negative observations.

MF-5-1: Project-specific Federal PEPs are incomplete and not approved.

Recommendation MF-5-1: The Federal IPT should complete the PEPs and obtain appropriate approval signatures.

MF-5-2: Decommissioning work and procurement awards are proceeding without CD-3 authority from the Acquisition Executive.

Recommendation MF-5-2: Obtain proper authority to perform CD-3 work or stop work.

MF-5-3: The EVMS system is not certified.

Recommendation MF-5-3: Complete certification of the EVMS system.

F-5-1: FPD is not certified to the required Level 3 for the magnitude of the project.

Recommendation F-5-1: Develop a schedule for completion of Level 3 certification and include in the CD-2 approval memo from the Acquisition Executive.

F-5-2: Current subcontracting acquisition strategy is not reflected in proposed cost-and-schedule baselines.

Recommendation F-5-2: Revise the project cost-and-schedule baselines and management documents to be consistent with the current subcontracting strategy.

F-5-3: Federal staffing planning over the project life has not been completed.

Recommendation F-5-3: The Federal IPT should complete an assessment of Federal staffing needs to support P&RACPs over the life of the project. Include a summary table in the IPT charter and PEP.

F-5-4: Performance-Based Incentives and the milestones to reach them have not been negotiated and included in the M&O contract and proposed baseline.

Recommendation F-5-4: Upon completion of project baseline planning, complete negotiation of Performance Based Incentives for the P&RACPs and include those milestones in the baseline schedule.

F-5-5: A project specific IPT charter has not been finalized and approved.

Recommendation F-5-5: Complete the IPT Charter and forward for signature.

F-5-6: The FPD is assigned as temporary FPD by the SR Site Manager until the end of FY2009. An FPD must be appointed and approved by the Acquisition Executive.

Recommendation F-5-6: Include appointment of an FPD in the CD-2 approval memo or a separate memo signed by the Acquisition Executive.

F-5-7: IPT failed in its review and acceptance of a significantly flawed CD-2 baseline proposal package.

Recommendation F-5-7: IPT should perform a self-assessment of its performance in the review and acceptance of the CD-2 submittal package and identify corrective measures (training, procedures, staff qualifications, etc.) to improve its performance and to share lessons learned with the rest of the SRS D&D community.

O-5-1: The SRNS ARRA PEP has not been finalized and approved.

Recommendation O-5-1: Complete and approve the SRNS ARRA PEP.

O-5-2: The SRNS ARRA ACP TEP has not been finalized and approved.

Recommendation O-5-2: Complete and approve the SRNS ARRA ACP TEP.

O-5-3: This negative observation was deleted in favor of new finding F-5-7.

O-5-4: The integrated project schedule will not contain dollar values for the BCWS of the resource-loaded baseline schedule.

Recommendation O-5-4: Require SRNS, upon approval of CD-2, to submit to DOE the native baseline schedule file and the Cost Processor generated BCWS over the project life.

O-5-5: The PDRI prepared by the Federal IPT significantly overstated the state of readiness for CD-2.

Recommendation O-5-5: Perform additional training/instruction on use and preparation of the PDRI.

O-5-6: The draft Project Operating Plan for P&RACPs is incomplete and inconsistent with current baseline planning.

Recommendation O-5-6: Revise the Project Operating Plan upon completion of baseline planning.

O-5-7: Corrective measures from the EVMS Compliance Review have not been implemented, and EVMS data has not been produced under a certified EVMS system.

Recommendation O-5-7: IPT should place the EVMS process for these projects under close surveillance for the initial six months of operation after approval of the proposed baselines.

O-5-8: The proof-of-principle grouting task is incorrectly included in the decommissioning WBS.

Recommendation O-5-8: Relocate the proof-of-principal task to the engineering WBS. Also, a management document should be prepared and approved that describes scope, justification, budget, and schedule for performing this work.

6. ENVIRONMENT, SAFETY/HAZARDS, AND HEALTH

6.1 Summary

The EIR Team interviewed the following personnel:

- Teresa Tomac, DOE
- Wade Whitaker, DOE AMCP
- Brian Dowdy, SRNS
- Brian Hennessey, DOE-SR
- Ray Hannah, DOE/AMCP
- Tony Long, SRNS/ACP
- Bill Erickson

The EIR Team reviewed the following P&RACPs documents:

- SRNS ARRA Briefing, Rich Slocum, 6/16/09
- Area Completion Projects D&D Work Planning and Control, W.E. Whaley, 5/09
- Multiple Environmental Evaluation Checklists
- Federal Facility Agreement for the Savannah River Site, WSRC-OS-94-42, Modification Date, 03/05/09
- SRNS Integrated Safety Management System Description, SRNS-RP-2008-00087, Rev 0, 8/15/08
- External Independent Review of Environmental Management Cleanup Projects, Cleanup Protocol Compliance, Incorporation of Corrective Actions, December 20, 2007
- Auditable Safety Analysis (ASA) for the P-Reactor Facility, WSRC-TR-2000-00117, 2/07

- ASA for the R-Reactor Facility, WSRC-TR-2000-00118, 2/09
- Site D&D Work Control Procedure, Manual C2, Procedure 2.05, 3/10/09
- SRNS LLC Worker Safety and Health Program, S-SHP-B-00005, Rev 0
- Employee Safety Manual, 8Q, Procedure 122, Hazards Analysis, 6/30/08
- SRNS Integrated Safety Management System (ISMS), Phase II Verification Review, Final Report, SRNS-RP-2009-0073, 3/16-4/3/09
- Letter Brian Hennesey to Regulators (Rev 3 Non Time Critical Action Removal Action for removal of Water from 105-P Basin, 5/12/09
- M.P Wilson letter to regulators for Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Acceptability Determination, 5/27/09
- 1993 Federal Facility Agreement-2009 Revision
- Early Action Remedial Action Implementation Plan for the PAOU (U), WSRC-RP-2008-4072, 6/09
- RSER/EE/CA for the R-Reactor Building (105-R) Complex (U), SRNS-RP-2009-00801, 6/09
- RSER/EE/CA for Disposition of Water in the 105-P Disassembly Basin, V-ESR-00002, 3/08
- RSER/EE/CA for P-Area Process Sewer Lines as Abandoned (NBN) (U), SRNS-RP-2009-01046, Draft
- RSER/EE/CA for the R-Area Reactor Area Cask Car Railroad Tracks as Abandoned (U), WSRC-RP-2008-4090, 3/09
- Explanation of Significant Differences for Revision 1.1, Early Action Record of Decision for PAOU, Rev. 0, 5/09 and 7/09
- RSER/EE/CA for the R- Reactor Building (105-R) Complex

The EIR Team determined that environment, safety/hazards, and health (ES&H) documentation was comprehensive and appropriate for this stage of the project. There were no nuclear safety hazards involved. The industrial type safety hazards were identified and analyzed. However, the EIR Team identified some areas that require attention.

The EIR Team identified 6 negative observations, 3 positive observations, and 1 neutral observation.

6.2 Scope

The EIR Team:

- Evaluated compliance with regulatory requirements and key agreements/decisions.
- Identified the functional make-up of the HA/S IPT, and provided an assessment of the overall staffing mix and expertise of the team.
- Assessed whether hazards identified and accident scenarios represent a reasonably comprehensive list.
- Determined if controls were capable of mitigating defined accidents and if confinement/containment of radioactive material was addressed.
- Reviewed the Integrated Safety Management System and assessed whether safety had been appropriately addressed throughout the lifecycle of the project.
- Assessed the HA process, including the use of internal and external safety reviews.
- As applicable, reviewed any Defense Nuclear Facilities Safety Board (DNFSB) interface and discussed with the local representatives the status of their involvement.
  - Assessed whether DNFSB issues have been reasonably considered and addressed.

- If not, identified outstanding issues, assessed when they would be resolved, and determined what risks they posed.

- Assessed status and resolution of corrective actions by the contractor, including incorporation of any additional identified safety requirements.

6.3 Discussion

The Federal Facility Agreement (FFA), effective August 16, 1993, governs corrective and remedial action processes from site investigation through site remediation, as well as describes the procedures for all three parties (DOE, SCDHEC and EPA) to set annual priorities (including schedules and deadlines) for those processes. The FFA Resource Conservation and Recovery Act (RCRA)/CERCLA Units or AOUs are scheduled to go through the standard remedial action/feasibility study process to determine an appropriate remedy. However, based on negotiations with regulators, removal actions may be performed at selected RCRA/CERCLA units where the RSER/EE/CA process may be used. The list of FFA D&D facilities from P and R areas go through the Facilities Decommissioning Evaluation and Decommissioning Project Final Evaluation or RSER/EE/CA process to determine if a response action is required. If a response action is required, the D&D facility is added to the appropriate AOU. For this EIR review, there are two AOUs—PAOU and RAOU.

The PAOU Project has been accelerated to reduce the SRS footprint. PAOU is approximately 100 acres in total area. The P Reactor building complex is contaminated with radionuclides. The P Reactor building (105-P) is comprised of three components: Reactor Vessel, Disassembly Building, and P-Reactor ancillary structure, including the engine houses 108-1P and 108-2P, as well as the standby pump house. Groundwater clean-up is not part of PAOU, although there are two soil vacuum extraction projects to control some limited volatile organic compounds source removal (known as projects PSA-3a and PSA-3b). These are described in the January 2009 Early Action Record of Decision and Action Memorandum.

The RAOU Project has also been accelerated to reduce the SRS footprint. RAOU is approximately 120 acres in size. In general, primary sources of contamination at RAOU resulted from facility operations. Spills, leaks, accidental releases, or simply the operation itself may have resulted in release of hazardous and/or radioactive substances. Contaminants present an unacceptable risk to human health and the environment. Unlike PAOU, decommissioning work at RAOU will include groundwater remediation.

6.3.1 Regulatory Requirements and Key Agreements/Decisions

P&RACPs employ an Area Project Core Team. Use of this team appears to bring early and effective consensus to navigating through complex CERCLA and RCRA regulatory issues. This is a positive observation.

On May 12, 2009, Brian Hennessey, the SRS Remedial Project Manager, submitted Revision 3 of the Action Memorandum for Non-Time Critical Removal Action for Disposition of Water from the 105-P Disassembly Basin. In accordance with agreements with regulators, these Non-Time-Critical Removals do not require regulatory approval for the Action Memorandums. However, terms and conditions, which include in this case additional actions, may require regulatory approval. This revision to the Action Memorandum did not modify original selection of forced evaporation to treat the basin water. It does include adding another source of water to the basin and grouting a potential release point (seismic slot) where any spills from the planned evaporation could migrate from the disassembly basin to the minus-40 elevation of the 105-P building.

SRS has already removed 94% of the water from the R-basin, and only 380,000 gallons remain. The 105-R Disassembly Basin is ready for grouting. Upon completion of the grouting, this shield water will have no disposal pathway within the R-Area. One of the additional conditions of this Non-Time-Critical Removal is that a CERCLA Off-Site Rule Request will be submitted for approval to use the 105-P Disassembly Basin for the treatment of CERCLA waste.

On May 27, 2009, M.P. Wilson of SRNS submitted a request for CERCLA Acceptability Determination for the 105-P Disassembly Basin. Since the 105-R water is contaminated, it meets the definition of CERCLA waste. Therefore, SRS has requested a CERCLA Off-Site Rule Acceptability Determination for the 105-P Disassembly Basin so it can receive water from 105-R. SRS personnel have discussed this proposal with regulators (both EPA

and SCDHEC), and they have agreed in principle that it would be acceptable to transfer the remaining shield water from the R-Basin after grouting to the 105-P basin for evaporation. This approval is expected in mid-August 2009. The site has not yet received the approved Offsite Rule Request to handle R basin water at P. This is a negative observation**.**

On July 28, 2009, a Public Workshop was held by SRS on the C, K, L and R Complexes. Both Ray Hannah and Chris Bergren were presenters. During this meeting and in an accompanying handout, they explained that the decision-making process would be streamlined. One of the examples presented was that the site planned to use existing information and use the End-State Decision reached for the P-Reactor complex to expedite selection of an End State for the remaining four production reactors complexes of which R is one. However, some work has been planned to begin at R Reactor before P Reactor. The site should be sensitive to creating public perceptions that are inconsistent with subsequent decommissioning work sequencing, even if minor. This is a negative observation.

There are multiple complex activities at P and R Areas, all of which have regulatory impacts. There are multiple EE/CA's (currently five for PAOU and six for RAOU), as well as Explanations of Significant Difference and Early Action Record of Decisions in addition to the Statement Basis/Proposed plans. In reviewing thousands of pages of documents, the EIR Team found no crosswalk to indicate where all these documents were in the process. For instance, the reviewer could not determine how document submittals were formally tracked (i.e., what systematic process was used). All documents are part of the Administrative record file, but that is not a tracking system. Some staff members are well-versed in what is going on, but no system could be provided to show this. A best management practice would employ the use of a systematic method to track regulatory submittals. Lack of a formal tracking system for regulatory submittals is a negative observation.

The Project cost estimate provided in EE/CA and the Explanations of Significant Difference document do not match the cost estimate provided for the EIR Team Review, which primarily contains decommissioning activities only. Other cost estimates provide deactivation and monitoring activities (to name a few), that although known to be lifecycle costs, do not correlate to actual costs reviewed.

6.3.2 Hazard Analysis/Safety Integrated Project Team

SRNS ISMS is the contractor management system for conducting work, including subcontracted work. Determination of applicable requirements is used for tailoring and incorporating principles and functions of ISMS. As Recovery Act Project requirements are identified, methods of compliance are employed to suit the hazards of specific activities through the Project phases. These are identified in the work packages through the use of AHA. The contractor integrates ISMS into a work package planning and development process. Development and review of the work packages is performed by a group of individuals for each technical area, not by a single integrated Project Team. SRNS provided training records or resumes of individuals involved in development and review of work packages and the ASA. The team concluded there was an adequate level of training and expertise. DOE-SR utilizes facility representatives to observe contractor field activities to assess and determine adequacy of contractor conduct of operations. The project will rely upon SRM 400.1.1 to maintain a strong ISMS posture.

6.3.3 Hazards and Accident Scenarios

The EIR Team reviewed ASA for the P-Reactor Facility. The facility was divided into four segments from a hazard/safety analysis perspective. Segment 1 was Building 105-P, except for the Purification Area and Assembly Area. Segment 2 was Building 105-P Purification Area. Building 105-P Assembly Area was Segment 3. Remaining P-Reactor facilities were designated as Segment 4. None of these segments were determined to be nuclear facilities (nuclear fuel was removed), but segments 1 and 2 were determined to be radiological facilities. Segments 3 and 4 were determined to be *Other Industrial*. The level of analysis for radiological facilities is higher than the level of analysis for other industrial (facilities). Segmentation was considered reasonable. ASA also included treatment of 4M gallons of contaminated water from the Reactor Disassembly Basin building.

No bulk chemicals are stored in the P-Reactor facilities. All chemicals currently stored in the P-Reactor facilities are not considered hazardous or are in small quantities.

ASA contained an excellent hazard assessment. Each postulated event was analyzed, and for each event, preventive features and mitigative features were specified. Controls to prevent and mitigate hazards were specified, as appropriate.

The P-Reactor facility's ASA was issued February 2007, well over two years from the time of this review (July/August 2009); there is a concern that it may be out-of-date in some sections. The EIR Team determined this to be a negative observation. Factors noted to justify this concern include:

- Current scope may be different from scope analyzed in ASA, e.g., 4M gallons of water to be treated in the current scope versus 4.5M gallons of water addressed in the ASA.
- The Executive Summary caution in the ASA stated: *An additional hazards assessment may be required if there is (1) an increase in chemical or radiological inventory above currently defined limits, or (2) a change in regulatory requirements, or (3) a change in the analyzed conditions.*
- Deactivation Activities in Section 1.4.2 and Decommissioning Activities in Section 1.4.3 may be different.
- The preliminary list of proposed activities in Appendix C may be different.

The EIR Team reviewed ASA for the R-Reactor facility and found that it is similar in format and content to the P-Reactor document. The facility is divided into six segments in which five segments are considered Radiological and one is considered Other Industrial—this segmentation was considered reasonable.

No bulk chemicals are stored in the R-Reactor facilities; all chemical quantities stored in the R-Reactor facilities are not considered hazardous or are in small quantities.

ASA contained an excellent hazard assessment. Each postulated event was analyzed, and for each event, preventive features and mitigative features were specified. Controls to prevent and mitigate hazards were specified, as appropriate.

The R-Reactor facility ASA was issued February 2009. The EIR Team has no reason to believe that it doesn't match the current scope of the cleanup project; however, the EIR Team believes that it is appropriate for the contractor to confirm this. This is a neutral observation

Two ASAs reviewed were technically robust and well-written. This is a positive observation.

6.3.4 Integrated Safety Management System

The EIR Team reviewed the SRNS ISMS description document. The ISMS five core functions, as well as its seven guiding principles, were well-explained. Figure 6, ISMS Mechanisms at SRNS, provides an excellent summary regarding how the guiding principles and core functions flow down to manuals and procedures to be used by personnel in conducting work. For example, *Site D&D Work Control Procedure*, FDP 2.05, specifically addresses the ISMS five core functions as part of the procedure. As another example, *SRNS Worker Safety and Health Program*, S-SHP-B-00005, Rev 0, also specifically addresses the ISMS five core functions as part of the program. As a final example, the *Employee Safety Manual* specifically addresses ISMS core functions. Based upon the above review, the EIR Team concluded that the ISMS description document is well-written, and integrated safety management flows down to the workers via manuals and procedures.

The SRNS ISMS description document is well-written. This is a positive observation.

6.3.5 Hazard Analysis Process

The hazard analysis process is based upon development of work packages and use and incorporation of the results of the AHA. Approved packages are reviewed and signed by representatives of technical areas covered by work being performed under the package.

6.3.6 DNFSB Interface

Two presentations to DNFSB personnel were reviewed. One was entitled *SRNS ARRA Briefing,* and the other was entitled *Area Completion Projects D&D Work Planning and Control*. The Project has been proactive in dealing with the DNFSB. There are no open DNFSB issues in regard to the cleanup project.

6.3.7 Resolution of Corrective Actions

Although many of the documents submitted for review by the EIR Team showed an extensive review and comment process with resolutions submitted and resolved, as well as corrective actions taken, no documentation was provided to the EIR Team showing how comments and corrective actions were assembled and tracked to ensure all were correctly resolved and implemented. The EIR Team identified this as a negative observation.

6.4 Findings and Observations

The EIR Team identified 6 negative observations, 1 neutral observation, and 3 positive observations.

O-6-1: The site has not yet received approval of the Offsite Rule Request to handle R Disassembly Basin water at the P Disassembly Basin.

Recommendation O-6-1: No work activities associated with the transfer of basin water should occur before the Offsite Rule Request is approved.

O-6-2: There is a potential perception issue when the D&D process stated in a public forum does not match actual plans for sequencing decommissioning work activities.

Recommendation O-6-2: Information presented in a public forum should match the decommissioning plan to maintain credibility with the community.

O-6-3: There does not appear to be a formal tracking system for regulatory submittals.

Recommendation O-6-3: Develop and maintain a formal regulatory submittal tracking system for both P&RACPs.

O-6-4: Costs provided in multiple environmental documents for PAOU are not consistent with other project-related cost data.

Recommendation O-6-4: Develop a single document that rolls up all actual decommissioning costs for the individual projects so that costs agree with other regulatory documents.

O-6-5: ASA for the P-Reactor Facility may be out-of-date.

Recommendation O-6-5: Confirm that ASA is not materially out-of-date.

O-6-6: Corrective action plans, comments, and resolutions are not centrally tracked.

Recommendation O-6-6: Develop a central data base or other suitable means to record and track comments, action plans, and resolutions.

O+6-1: P&RACPs have employed an Area Project Core Team resulting in early and effective consensus to navigate through complex CERCLA and RCRA regulatory issues.

O+6-2: The two ASAs reviewed were technically robust and well-written.

O+6-3: The SRNS ISMS description document is well-written.

O~6-1: The contractor should confirm that the R-Reactor facility ASA reflects current scope of the cleanup project.

7. QUALITY ASSURANCE/QUALITY CONTROL

7.1 Summary

The EIR Team interviewed the following personnel:

- Barbara Headrick, SRNS, AC/SWM QA Manager
- Chris Amos, SRNS, Team Lead, SSES VAPA

The EIR Team reviewed the following P&RACPs documents:

- PEP for ARRA Project, V-PEP-G-00004, Rev. F, 7-20-09 (draft)
- TEP for American Recovery and Reinvestment Act Project, ACP, V-PEP-G-00005, Rev A, (Draft)
- Washington Savannah River Company (WSRC) Quality Assurance Management Plan (QAMP), WSRC-RP-92-225, Rev 21, 3-31-08
- SRNS QAMP, SRNS-RP-2008-00020 (Draft)
- 10 CFR 830, Subpart A
- DOE Guide 413.3-8, EM Cleanup Projects
- ARRA Risk Summary and Contingency Analysis Report, SRNS No. Y-RAR-G-00025, Rev. 0, 7-7-09.
- EM RAP Portfolio Management Framework
- EIR of EM Cleanup Projects, Cleanup Protocol Compliance, Incorporation of Corrective Actions, 12-20-07
- SRNS ARRA Activity Readiness Self-Assessment Plan
- Multiple Single Issue Reports and Management Field Observation reports for P Area and R Area
- P Reactor Self Assessment Report
- Site D&D Work Control Procedure, Manual C2, Procedure FDP 2.05
- Management Policies, Manual 1-01, Table of Contents
- QA Manual, Manual 1Q, Table of Contents
- Site D&D Work Package, AHA No. FDD-11749, 105-R: Grouting of Disassembly Basin-Phase 1
- Site D&D Work Package, AHA No. FDD-11759, 105-R: Pump Grout into Canal Void Space
- 105-R Reactor Disassembly Basin Grout Placement Strategy, SRNL-TR-2009-00157
- On-Site Production of Ready-Mixed Concrete (U), Spec. No. C-SPC-G-00071, Rev 0
- Area Completion and Solid Waste Management 2009 Self-Assessment Plan (U), SRNS-RP-2009-00077, 1-09
- Self Assessment Summary, 2009-SA-004760, 8-7-09

The EIR Team determined that the QAMP contains, reflects, and references much of the appropriate program-level intentions of the application of quality systems, procedures and instructions. The team believes that quality assurance is appropriate for start of CD-2, once the findings in this section have been satisfactorily resolved.

The EIR Team identified 2 findings, 2 negative observations, and 1 positive observation.

7.2 Scope

The EIR Team:

- Assessed the applicability, completeness, adequacy, and flow-down of the Project QA Program, including software quality assurance (SQA), based on DOE Order 414.1C and 10 CFR 830 Subpart A.
  - The EIR Team reviewed the record of QA audits performed on the Project and disposition of audit findings.
- Ensured that the QA/QC Plan and implementing procedures address personnel training and qualifications, quality improvement programs, document and record management, work processes, management and independent assessments, acceptance test planning and implementation, and the process for dispositioning field changes.
- Assessed QA/QC requirements for construction planning and work processes.
- Assessed whether or not QA requirements (NQA-1 if applicable) have been appropriately incorporated into the *Design-to* functions, and ensured that costs, time, and resources are adequately estimated and included in the baseline.
- Ensured that the contractor QA/QC Plan addressing the scope and content for the CD-2 phase of the project has been reviewed and approved by the appropriate DOE organization.

7.3 Discussion

7.3.1 Project QA Program

The QAMP currently in effect is the QAMP (WSRC-RP-92-225). This is basically the plan used by the previous site M&O contactor, WSRC, and it was approved by DOE. This is also the same QA plan identified in the draft PEP for ARRA Project and the draft TEP for ARRA Project. The TEP is a sub-tier execution plan under the PEP. However, SRNS is updating the site-wide QA Plan, and a 7/13/09 draft of this update, SRNS QAMP (SRNS-RP-2008-00020), was provided to the EIR Team for review. This draft needs to be finalized. The EIR Team has determined that this is a finding. In addition, there needs to be consistency between the plan identified in the PEP and TEP and the plan being utilized by SRNS, i.e., all three plans should identify the same QA Plan.

The draft QAMP, SRNS-RP-92-00020, was reviewed for applicability, completeness, adequacy, and flow-down. The plan is similar to WSRC's plan in most respects, and it is considered applicable, complete, and adequate. Figure 1, *SRNS QA Program Relationships*, identifies the flow-down of requirements, policy, program basis, and implementation basis. It also identifies the requirement for DOE to review and approve the QAMP. QAMP requires application of ASME NQA-1-2000, *QA Requirements for Nuclear Facility Applications* and 10 CFR Part 830, *Nuclear Safety Management, Subpart A, QA Requirements*. Given the types of work activities covered by this project, e.g., deactivation and in situ decommissioning of P and R reactors, it is not clear why NQA-1 is invoked for this particular project, and it may cause an unnecessary increase in project costs. The same can be said for requiring 10 CFR 830, Subpart A, for those areas of the reactors (e.g., Building 105-P, Assembly Area; Remaining P-Reactor Facilities) that are not considered *Radiological*.

The EIR Team reviewed 30 single-issue reports and management field observation reports for P Area, as well as reviewed 50 single-issue reports and management field observation reports for R Area. The reports were technically well-written, and corrective actions have been taken in many cases. This has been noted as a positive observation.

The SRNS QAMP and implementing procedures require audits of subcontractors to ensure that subcontractor QA programs are adequate. From the interview, the only subcontract at this time was Lafarge (off-site supplier of concrete/grout). An audit of the subcontractors QA manual and program had been performed and accepted.

7.3.2 QA/QC Plan

The QAMP addresses the following requirements:

- QA Manual, 1Q—QA Implementing Procedures
- QAP 2-2—Personnel Training and Qualifications
- QAP 19-2—Quality Improvement
- QAP 6-1 and QAP 17-1—Document and Records Management
- Audits, Section 18.0—Management and Independent Assessments
- QAP 10-1 and QAP 11-1—Acceptance Test Planning and Implementation
- QAP 3-1—Disposition of Field Changes
- QAP 20-1—SQA

7.3.3 QA/QC Requirements for Construction Planning and Work Processes

A general summary of QA/QC requirements for work processes can be found in the SRNS QAMP Section Criterion 5, Work Processes. More detailed requirements are contained in the implementing procedures, specifically QAP 9-4, Work Planning and Control.

Two site D&D work packages were reviewed from a QA/QC perspective (FDD-11749 and FDD-11759). The work packages were not signed and not dated. No QA/QC work related requirements, such as hold points, could be found in the work packages. In addition, QA was not one of the subject matter experts that needed to concur in the work packages. The QA subject matter expert review and concurrence would ensure that appropriate QA requirements have been incorporated in the work packages. This has been noted as a negative observation.

Specification titled, *On-Site Production of Ready-Mixed Concrete (U)*, Specification No. C-SPC-G-00071, Rev. 0, was also reviewed from a QA/QC perspective. Quality requirements, inspection and testing requirements, and surveillance and audit hold points were included. Although the document has not been signed and issued, it did indicate that a Quality Engineer would be one of the signees.

7.3.4 QA/QC Requirements Incorporation into Design and Performance Baselines

Review of the baseline estimate and schedule did not show that cost and time, as well as resources for QA/QC have been adequately estimated and included. The EIR Team determined that this is a finding.

7.3.5 DOE QA/QC Plan Review

The current QAMP (WSRC-RP-92-225) has been reviewed and approved by DOE. The QAMP revision in process (SRNS-RP-2008-00020) will be reviewed and approved by DOE at an appropriate time to support execution of EM cleanup work.

7.4 Findings and Observations

The EIR Team identified 2 findings, 2 negative observations, and 1 positive observation.

F-7-1: The QAMP has not been finalized and approved

Recommendation F-7-1: Finalize QAMP and obtain approval.

F-7-2: The baseline estimate and schedule did not show that cost and time, as well as resources for QA/QC have been adequately estimated and included.

Recommendation F-7-1: Include cost and time, as well as resources for QA/QC in the baseline estimate and schedule.

O-7-1: All work packages do not contain QA/QC requirements, such as hold points.

Recommendation O-7-1: Ensure quality requirements are included in all work packages.

O-7-2: All work packages do not have a required concurrence by QA that would ensure that appropriate QA/QC requirements would be reflected in the work packages.

Recommendation O-7-2: Include QA concurrence on all work packages.

O+7-1: Single-issue reports and management field-observation reports were technically well-written, and corrective actions have been taken in many cases.

8. SAFEGUARDS AND SECURITY

8.1 Summary

The EIR Team interviewed the following personnel:

- Scott Boeke, DOE SRS Office of Safeguards, Security and Emergency Services
- Teresa Tomac, DOE Facility Representative
- Chris Amos, SRNS Safeguards, Security and Emergency Services VA Analyst
- James Tomac, SRNS Safeguards, Security and Emergency Services Manager

The EIR Team reviewed the following P&RACPs documents:

- General Site Security Plan, SRNS-RP-2008-00137, 8/1/08
- Non-Radiological, Chemical, and Biological Sabotage Analysis Facilities-SRNS-J8700-2008—00022, 11/08
- Modified Security Plan-Temporary Storage of D20 Contained in 105-R Facility-SRNS-2008-00137, Rev. 0, 4/2/09
- Modified Security Plan-Temporary Storage of D20 Contained in 105-P Facility-WSRC-RP-2006-00520, Rev. 3, 9/23/08
- S&S Self-Assessment Report for Programmatic and General Site- SRNS-J87000-2009-00007, 1/23/09

The initial submittal to the EIR Team did not include or reference any of the security documents referenced above. After repeated requests prior to and during the site visit, access to the appropriate documents and staff was provided.

The EIR Team determined that appropriate security planning for the P&RACPs has been performed.

The EIR Team identified 2 negative observations and 1 positive observation.

8.2 Scope

The EIR Team:

- Assessed whether or not a Preliminary Security Vulnerability Assessment Report, as defined in DOE M470.4-1, has been updated as required by DOE O413.3A.
- Assessed the completeness and accuracy of applicable S&S requirements, methods selected to satisfy those requirements, and any potential risk acceptance issues applied to the project, as well as their incorporation into the project.
- Reviewed the Performance Baseline to ensure that cost, schedule, and integration aspects of S&S were appropriately addressed.
- Assessed whether or not all feasible risk mitigation had been identified and that S&S concerns, for which explicit line management risk acceptance will be required, are appropriately supported.

8.3 Discussion

8.3.1 Preliminary Security Vulnerability Assessment Report

A bounding Radiological Sabotage Analysis was performed for the P and R reactor facilities (reference- Non-Radiological, Chemical, and Biological Sabotage Analysis Facilities, SRNS-J8700-2008-00022, Nov. 2008). This analysis determined that site boundary consequences were below Threat Level 4 thresholds; therefore, a Vulnerability Assessment would not be required.

8.3.2 S&S Requirements

The P and R reactors are located within a Property Protected Area. The bounding RCBSA referenced above concludes that no further S&S requirements beyond those currently provided are required.

Modified Security Plans for P and R areas have been prepared that recognize a potential to uncover reportable quantities of D2O (heavy water) during D&D activities. The plans delineate responsibilities, actions, and compensatory measures to manage, secure, and transfer this material, if uncovered. This potential risk is not identified in the risk analysis documents provided to the EIR Team as a potential risk specific to both P&RACPs. Although it is not apparent, the risk may only apply during the deactivation phase, which is not part of the capital asset project. The P&RACPs risk assessments should screen for this potential risk and for applicability to project scopes.

8.3.3 Incorporation of S&S into the Performance Baseline

The General Site Security Plan identifies security interests in the P and R reactor areas as Category IV nuclear material and government property. Existing Property Protection Area protection methods (chain link fence and random patrols) are adequate without implementation of further protection strategies.

8.3.4 S&S Risk Mitigation

Based on analysis of security interests, threat level assessment, and existing security measures, there are no performance-based security requirements applicable to P&RACPs and no residual security risks requiring line management acceptance.

8.4 Findings and Observations

The EIR Team identified 2 negative observations and 1 positive observation.

O-8-1: A risk that reportable quantities of D2O (heavy water) may be uncovered during D&D activities has not been screened in P&RACPs risk assessments.

Recommendation O-8-1: Include this potential risk in the risk screening process for the updated risk assessments for P&RACPs.

O-8-2: Security planning documents referenced in this section are not referenced or credited in any of the management documents provided for the CD-2 EIR (PEP, TEP, IPT, etc.).

Recommendation O-8-2: Include a reference to, and summary of, security planning pertinent to P&RACPs that has occurred.

O+8-1: SRNS and DOE security organizations have prepared appropriate, professionally prepared, and approved documentation that security planning necessary to support a CD-2 baseline request has been conducted.

9. TRANSITION PLANNING

9.1 Summary

The EIR Team interviewed the following personnel:

- Wade Whitaker, P&RACPs FPD
- Ray Hannah, P ACP Deputy FPD
- Rita Stubblefield, R ACP Deputy FPD
- Chris Bergren, SRNS P&RACPs Project Manager
- Donna Kmetz, SRNS P&RACPs Project Controls
- Tony Long, SRNS Cost Account Manager
- Ron Socha, SRNS Cost Account Manager

The EIR Team reviewed the following P&RACPs documents:

- P Area Completion PEP, Draft, 8/5/09
- R Area Completion PEP, Draft, 8/5/09
- PEP for ARRA Project, V-PEP-G-00004 Revision F, 7/20/09
- TEP for ARRA Project, Area Completion Projects, V-PEP-G-0005 Revision A, 6/2/09
- EM RAP Portfolio Management Framework, RAPD-EM-09004 Revision 0, 7/10/09
- Recovery Program Management Plan, Draft E, 7/17/09
- Project Operating Plan Savannah River Site D&D P&R Areas Recovery Act Project, Draft, undated

The EIR Team determined that P&RACPs project transition and closeout scope has not been defined and included in the project cost-and-schedule baselines.

The EIR Team identified 1 major finding, 1 finding, and 2 negative observations.

9.2 Scope

The EIR Team:

- Reviewed transition requirements and plans and assessed whether or not they:
  - Demonstrated that the closure area met closure and safety requirements and key performance parameters.

- Defined sufficient scope to enable reasonable estimates of cost, schedule, and resources.

- Assessed whether cost and time, as well as estimated resources, were defensible to accomplish the required startup activities and had been included in the performance baseline.
- Assessed whether there was sufficient cost-and-schedule contingency to address uncertainties during transition.
- Assessed whether the transition plan had been fully integrated with existing functional organizations including security.
- Assessed whether results of tests had been factored into transition planning.

9.3 Discussion

9.3.1 Transition Plans and Requirements

P&RACPs are currently defined as complete upon mechanical completion of the ARRA funded project scope of work. This is a constrained milestone scheduled to occur in September 2011. This milestone has been imposed on the project to achieve spend-out of ARRA funds by the end of FY2011. Successor activities to mechanical completion have been identified in FY2012 and FY2013, but these activities were stated to be beyond the scope of the project. However, project completion, as defined in DOE O413.3A, includes validation of key performance parameters (completion criteria), plans for transition to operations, or closeout of the project, all of which culminate in CD-4, *Approval to Operate or Project Closeout*. While it is appropriate and desirable to focus the Project Team on mechanical completion as a major project milestone, project completion is determined by its logical conclusion, not by a funding source.

A CD-4 milestone is not included in the proposed baseline schedule. Activities required to achieve CD-4 are also not identified.

The draft PEP submitted to the EIR Team a few days prior to the site visit did specify two key performance parameters. However, this is a draft document that has not been reviewed by the Project Team. A final review and approval may result in different and additional key performance parameters. PEP did not specify how these parameters would be validated to support CD-4. Site discussions indicate that validation will primarily occur through regulator walk-downs and approval of the waste units.

The scope of work required to validate the key performance parameters, as well as the transition and closeout scope, needs to be defined, reviewed by the Project Team, and documented in an approved management document. A separate transition plan or PEP would satisfy this requirement.

9.3.2 Cost and Time, as well as Resources Estimated

The acquisition strategy indicated above, as well as validation of key performance parameters and transition activities, have not been defined and documented; they are not presently included in the proposed cost-and-schedule baselines.

9.3.3 Cost-and-Schedule Contingency

Since no transition scope has been included in the project, there has been no evaluation of cost-and-schedule contingencies associated with this phase of the project.

9.3.4 Transition Plan

Transition planning has not been included in the scope of the project. Transition planning should include an identification of organizational interfaces and documentation of their agreement with the proposed transition plans.

9.3.5 Results of Tests

There were no testing requirements identified or discussed during the onsite review relevant to transition planning.

9.4 Findings and Observations

The EIR Team identified 1 major finding, 1 finding, and 2 negative observations.

MF-9-1: Key Performance Parameters (Completion Criteria), as well as their validation methods have not been determined and included in the project baselines.

Recommendation MF-9-1: Complete the planning of key parameters and their validation methods; verify in an approved management document, and include in the project cost-and-schedule baselines.

F-9-1: Transition and CD-4 task planning is incomplete and not reflected in the proposed baseline.

Recommendation F-9-1: Complete the planning of transition activities and tasks required to achieve CD-4 and include in the project cost-and-schedule baselines.

O-9-1: Transition activities have not been screened in the risk assessment.

Recommendation O-9-1: Include transition activities in the risk assessment and separately identify cost-and-schedule contingencies for this phase of the project.

O-9-2: Transition planning does not include identification of successor organizations for operations or control of the completed projects.

Recommendation O-9-2: Identify organizations that will receive the completed project; document their concurrence in turnover plans with an MOU or signature on a transition plan (or a PEP that includes the transition plan).

10. DOCUMENTATION AND INCORPORATION OF LESSONS LEARNED

10.1 Summary

The EIR Team interviewed the following personnel:

- Rita Stubblefield, DOE
- Ron Socha, SRNS/ACP
- Ray Hannah, DOE/AMCP
- Peyton A. Northington, ACP Operations Superintendent.

The EIR Team reviewed the following P&RACPs documents:

- SRS Operating Experience and Lessons-Learned Program, Home page with instructions
- SR Operating Experience Program Information System, Special Information Notice Identifiers; 2009-LL-0048, 7-29-09: 2008-LL-0073, 11/11/08: 2009-LL-0042, 7/7/09
- SRS Company Level Procedure, Operating Experience Program, Manual 1B, Procedure MRP4.14, Rev. 14, 11/25/08.
- Site Tracking, Analysis, and Reporting Single Issue Reports; Poor Communications Leads to Splash of Operator, STAR No. 2009-CTS-006470; Corrective Actions from Chemical Burn Injury, STAR No. 2009-CTS-

07180; Contamination Found Outside An Area Posted for Contamination Control, STAR No. 2009-CTS-0019; Failure to Properly Administer Lockout/Tagout (ARRA), STAR No. 2009-CTR-005368.

The Project has a mature Lessons-Learned program, which is being utilized.

The EIR Team identified 1 positive observation.

10.2 Scope

The EIR Team:

- Assessed whether the Project Team is documenting and sharing lessons learned from their project internally and externally.
- Assessed whether the Project Team is reviewing and incorporating lessons learned from this and other projects.

10.3 Discussion

10.3.1 P&RACPs Project Lessons-Learned Documentation and Sharing

The Project Team delivered a number of Site Tracking Analysis and Reporting (STAR) Single Issue Reports which show how the project is systematically identifying problems, documenting, and disseminating this information to the SRS site and DOE complex as a whole. The system is mature and being used in a constructive manner to improve potential for project success.

10.3.2 Incorporation of Lessons Learned from Elsewhere

The project is using SRS Company-Level Procedure, Operating Experience Program, Manual 1B, Procedure MRP4.14, Rev. 14, 11/25/08, to ensure that proper attention is given to DOE system-wide Lessons Learned. This project is using a mature and well-written lessons-learned program.

10.4 Findings and Observations

The EIR Team identified 1 positive observation.

O+10-1: The Project has a well-defined Lessons-Learned program that is being applied properly.

APPENDICES

A. Review Team Assignments and Biographical Sketches

EIR Team members' assignments are shown in Table A-1. Biographical sketches also are provided.

Table A-1: Review Team Assignments

REVIEW AREAS										
Team Member	**1 Technical Scope**	**2 Schedule**	**3 Cost**	**4 Risk Mgmt**	**5 Project Mgmt**	**6 ES&H**	**7 QA/QC**	**8 S&S**	**9 Transition Planning**	**10 Lessons Learned**
Jon Balis†		A	A							
Bill Dykema†		L			A				A	
Kyle Farmer†		A	L	A						
Jay Glascock†o	A	A	A	A	A					
Phil Johnson†	L			A			A			L
Lloyd McClure	A	A			A					
Carmelo Melendez†o	A	A	A	A	A				A	
Bill Newton*†				L	A					
Rupert Osborn†	A					L	L			A
Larry Skeen†				A	L			L	L	
Arlene Weiner†	A			A		A				
Mark Sollenberger†#				A						
Ed Tourigny#						A	A			
Ed Ziegler			A		A					

*** JUPITER Team Lead | † "Q" Cleared | # Offsite Document Reviewer | o OECM Representative**

L – Lead; A – Assist

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Mark Sollenberger	*JUPITER*	(865) 988-9664	landism@bellsouth.net

Name	Affiliation	Principal Phone	E-Mail
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Ed Ziegler	*JUPITER*	(864) 329-0148	EdwardZiegler@bellsouth.net

Biographical Sketches of EIR Team Members

JON BALIS, MBA, PMP, Balis & Company. Mr. Balis possesses 25 years of experience in the construction industry, including 20 years of experience as an independent cost consultant, serving design teams on both public and private projects. He has an MBA in Finance and Cost Accounting Specialization and is a specialist in providing cost-and-schedule control for such agencies as DOE, GSA, and DOD. He is also an expert in analyzing costs of highly technical projects for National Laboratories (LANL, SNL, ORNL, INEEL, and LLNL), DOE plants (SRS, Kansas City Plant, Pantex Plant) and for defense installations. Mr. Balis is an expert in production of life-cycle cost analyses as required by DOE Order 430.1A, "Life Cycle Asset Management." Mr. Balis has been consultant in charge of cost control for more than 30 LANL projects on A/E Fixed Price On-Call Contracts since 1994. He produced life-cycle cost analyses for LANL, SNL/NM and SNL/CA. He has served as a Value Engineering session leader for LANL, SNL, and the State of New Mexico.

Mr. Balis' major project experience includes Independent Project Reviewer for Y-12 NSC HEU Materials Facility (HEUMF) and the Beryllium Manufacturing Facility; LLNL Site Utilities Replacements & Upgrades Project & FIRP; LANL TA-55 Fire Protection Yard Main Project; Kansas City Plant Gas Transfer Capacity Expansion Project and FIRP; and SRS Tritium Extraction Facility. In addition, he has served as Schedule Analyst, LLNL Engineering Technologies Complex Upgrades; Cost and Scheduling Lead for SNL Test Capabilities Revitalization, Conceptual Design Report; Cost and Scheduling Lead for SNL Underground Reactor Facility CDP, Conceptual Design Report and Title I Design; Cost Analyst, INEEL Mesoscale Subsurface Science Research Facility, Pre- Conceptual Design Report Cost Justification; and Quality Control Reviewer, estimating/schedule support for HEUMF. He has an active DOE "Q" clearance.

WILLIAM DYKEMA, MPR Associates, Inc. Mr. Dykema has extensive Project Control experience, particularly project cost-and-schedule techniques. He provided schedule and cost support for NNSA Plutonium Disposition Projects, as well as provided reviews and assessments of construction cost estimates and integrated schedules. He assessed construction management options, managed an estimating department responsible for preparation and negotiation of change orders, prepared project specific detailed cost engineering reports, and provided cost-and-schedule troubleshooting analysis with recommendations for mitigating impacts. Mr. Dykema has managed multi million dollar projects for the utility industry; ensured compliance of civil, structural, mechanical and electrical work with contract specifications; estimated new contract work and changed orders; completed schedule analysis to determine impact of delays; and performed constructability and value engineering reviews of plans and specifications. Mr. Dykema was recently selected to be a team member responsible for a construction project review of the DUF6 facilities, his responsibilities during that review were in the areas of project management, cost and schedule. Mr. Dykema has been involved in several DOE project reviews over the past ten years with general responsibility in the project management and project control areas. Mr. Dykema evaluated bid and proposals regarding schedule, cash flow, and cost comparison; established a system for tracking project status relating to schedule and contractor progress payments; and developed estimates and negotiating strategies for change orders. He supervised and coordinated the activities of the installation and erection contractors for the steam generators, condensers, pressure piping, large bore hangers, and other related equipment, and surveillance of contractors for compliance to contract specifications, standards, codes and required tests. Mr. Dykema has an A.S. Degree from Morrison Institute of Technology in Mechanical Engineering. He has an active DOE "Q" clearance.

KYLE FARMER, *JUPITER*. Mr. Farmer has over 40 years of experience in civil engineering and cost engineering. He has supervised a full range of service, supply, construction contract estimates, and construction contract modification estimates. Mr. Farmer served as Manager of the Construction Cost Estimating Section for Mason-Hanger Silas Mason Inc., where he was responsible for providing a full range of estimating services for construction, service, and supply contracts for DOE's Pantex Plant in Amarillo, TX. This included project retention of plant historical cost data, verification of general contractor change order costs, and compliance with DOE Orders 4700.1, 5700.2C, and MA-0063 relative to cost submittals for Conceptual Design Reports and Project Data Sheets. He directed and supervised five to seven cost and scheduling estimators estimating a cost volume of $195 billion per year. He participated as a member and sub-team leader for Independent Cost Estimating for the DOE EM Cost Quality Management Assessments. Mr. Farmer served as a Construction Cost Estimator at Pantex and was responsible for architectural, structural and civil estimating including collection and retention of their historical cost data. He was responsible for ensuring that cost estimates were in compliance with relevant DOE orders. As a Project Engineer at Pantex, Mr. Farmer was responsible for the budgets, schedules, funding

and progress tracking, and design of projects at the Pantex Plant. Average volume of projects per year was $25M. During this period, he was detailed to the Joliet Army Ammunition Plant project for four months. He has co-authored several DOE publications on project costing and cost analysis. Mr. Farmer has an active DOE "Q" clearance.

JAY GLASCOCK, MEng, DOE-HQ OECM. Mr. Glascock currently serves in the Office of Engineering and Construction Management, with the Department of Energy (DOE), developing policies and procedures governing the Department's construction and environmental project management efforts. Additionally, he supplies technical support to performance reviews used by senior DOE executives to make critical decisions on all construction and environmental projects. He has more than 20 years of experience in leadership, management, and supervision in the public sector as a civil engineer and program/project manager, including service in executive-level positions. He has extensive experience in project planning and programming, design and construction management, facilities operation and maintenance, budget development and execution, and real property accountability. He has assisted senior-level executives to resolve challenging strategic planning, organizational and process improvement, energy, environmental, and contract management issues. He has served as a project engineer, planner, programmer, designer, and manager for major construction, alteration, and repair projects at Air Force bases in the United States, Republic of South Korea, Jordan, and Ascension Island. He attended the United States Air Force Academy to earn his BS in General Engineering and the University of New Mexico for his BS and MEng in Civil Engineering with emphasis in Construction Management. He holds an active DoD TS clearance.

PHIL JOHNSON, BS, CPM, *JUPITER*. Mr. Johnson has a BS in Chemical Engineering, and is a Certified Professional Manager from the Institute for Professional Managers. He has 35 years experience including 23 years at the Y-12 National Security Complex (NSC) in Oak Ridge, TN. He has served as a Project Manager, Project Engineer, Design Manager, and Technical Manager, having worked on projects in every major production facility located at Y-12 NSC. He served as the original Y-12 analyst for the Defense Program Analysis Group located at Sandia National Laboratory in support of the total Nuclear Weapons Production Complex. He has a cursory knowledge of all current DOE production facilities and all three Weapons Design Laboratories. He was the resident Design Authority Representative (DAR) for the new Y-12 NSC Special Materials Facilities and has a working knowledge of all the major Special Materials Processes as well as the balance of the production facilities at Y-12. His work required maintaining an active Radiation Worker certification and familiarity with the security requirements. Mr. Johnson has an active DOE "Q" clearance.

LLOYD MCCLURE, MEng, CM™, *JUPITER*. Mr. McClure has a BS and a MEng in Chemical Engineering and is a Certified Manager (CM™) from the Institute of Certified Professional Managers (ICPM). He has extensive experience in the fields of radioactive waste treatment, chemical separations, fuel reprocessing, technology commercialization, regulatory compliance, and program and project management. He has more than 35 years of experience, with more than 25 years in management positions. He managed process development, equipment verification, design, and startup activities for several major U.S. Department of Energy line item projects. He formed and staffed the Westinghouse Center for Research and Technology Commercialization at the Idaho National Engineering and Environmental Laboratory. Mr. McClure has a broad network of contacts both in the U.S. and internationally and experience working directly with Department of Energy (DOE) Operations Offices and Headquarters staff. Mr. McClure has participated in several External Independent Reviews of DOE Environmental Management projects. He recently provided program management support to the DOE Office of River Protection by managing completion of actions to respond to issues identified by an External Flowsheet Review Team for improvements to the Hanford Waste Treatment Plant. Prior to that he was the Deputy Project Manager and Chief Engineer for the Demonstration Bulk Vitrification Project with AMEC. Prior to joining AMEC, Mr. McClure was a Senior Project Manager with the Jacobs Engineering Group and was the Chemical Engineering Discipline Manager with COGEMA Engineering Corporation. During most of his career he filled positions of increasing responsibility at the Idaho National Engineering and Environmental Laboratory.

CARMELO MELENDEZ, Eng.D. , PE, PMP, CFM, LEED GA, DOE-HQ OECM. Dr. Melendez has a B.S. in Mechanical Engineering, a MBA in Financial Management, a MEng in Civil Engineering, and an Eng.D in Engineering Management. He also completed the University of North Carolina Tench Francis School of Business Advance Management Program. He is a Registered Professional Engineer (PE), a Certified Project Management Professional (PMP®), a Certified Facilities Manager (CFM®), a Certified LEED® Green Associate, and held an Unlimited Level III Contracting Officer Warrant for Design, Construction, Environmental, and Facilities Engineering. For 20 years, he served as a member of the Navy's Civil Engineer Corps. In that capacity, he held

multiple assignments in multiple locations, predominately involved in facilities engineering, real property, and project management, executing construction programs and projects worldwide. He held specializations in Facilities Engineering, Construction Management, and Financial Management. His last assignment was as the Public Works Director and Officer in Charge of Construction Marine Corps Combat Development Command/Base Quantico. In that capacity he directed over 300 personnel and administered all facilities planning, design, construction, environmental, and maintenance activities impacting $3 billion in plant property and $400 million of yearly construction & support services. He has an active DOE "Q" clearance.

JOHN W. (BILL) NEWTON, MS, MEAd, PMP, *JUPITER*. Mr. Newton has a MS in nuclear engineering and a MEAd in engineering administration. He has over 30 years of experience with DOE in the NNSA Office of Defense Programs (DP) (1984-2004) and in the Office of Nuclear Energy, Science, and Technology (NE) (1973-1984). Since joining *JUPITER* Corporation in January 2005, Mr. Newton has served as Director of Management Services. Beginning in 2005 he assisted Dr. Cliff Poor, *JUPITER* Director of Project Assessments, with numerous EIRs, including serving as the Team leader for the NTS Criticality Experiments Facility Project EIR and for the NTS Replace Fire Stations No. 1 and No. 2 Project EIR. In January 2007 Mr. Newton assumed the position of *JUPITER* Director of Project Assessments. Since then he has planned, coordinated, and participated in many EIRs. As a federal employee he most recently worked in the Office of Military Application and Stockpile Operations (NA-12) with 12 years of experience directing nuclear materials management and packaging activities and one and a half years managing improvements to NA-12 business operations, including organizational functional analyses and process development. Earlier responsibilities in DP and NE include program and project manager for the N Reactor (WA), the Fernald Plant (OH), and liquid metal breeder reactor component development and systems engineer for the Fast Flux Test Facility (WA). He has been a member of teams and task forces with broad organizational representation from DOE headquarters offices, field elements, and other agencies. He has extensive experience directing and managing programs in dynamic political and technical environments and in developing and directing operational projects. He is a successful manager with extensive experience building and leading teams and utilizing people (federal, operating contractor and support services) to accomplish mission objectives. He has an active DOE "Q" clearance.

RUPERT O. OSBORN, JR., PE, BS, *JUPITER*. Mr. Osborn has 29 years of engineering experience. He has managed design, materials, cost, production methods, and installation of special lifting fixtures, material handling systems, production tooling, and shipping containers for hazardous materials. He has dealt extensively with federal regulations, military standards, and ANSI and ASME specifications, ensuring projects are in compliance with required regulations and standards. As a mechanical engineering specialist for Pro2Serve, he prepared and reviewed calculations for certification of compliance with ASME requirements, Nuclear Underhung Cranes and Monorails, NUM-I. As a project engineer at the BWXT Y-12 plant, he managed technical professionals in design and installation of new equipment, design of production tooling and fixtures required to support weapons programs and production needs, and design and testing of shipping containers for hazardous materials (including nuclear). In addition, he interfaced with facility, operations, and program personnel to ensure modifications and new equipment were necessary and would meet intended requirements. He made recommendations in material flow, equipment utilization, and new construction that saved substantial money and time and eliminated installation issues, such as major modifications to the facility. With much safety and inspection training, Mr. Osborn had multiple registrations and certifications, such as with the American Society of Mechanical Engineers. He attended the University of Tennessee to earn his BS in mechanical engineering, machine design, and thermal environmental systems. He has an active DOE "Q" clearance.

LARRY L. SKEEN, BS, PMP, *JUPITER*. Mr. Skeen is a certified Project Management Professional and has a B.S. in Civil Engineering. He has extensive experience with the NNSA Project Management System, and has project management, project engineering and technical lead experience with nuclear, explosive and security infrastructure line item projects He has been a Project Manager/Engineer for PANTEX Plant for over 30 years Mr. Skeen has managed multi-million dollar line item projects including a security enhancements project that included nuclear material storage facilities, and electronic systems including perimeter and interior detection and alarm systems, central and secondary alarm host systems, aircraft detection systems, and aircraft deterrent systems; design and construction of an explosive blast resistant facility to machine explosive charges remotely, new explosive blast resistant nuclear weapon assembly facilities, a new fire station and emergency operations center, backfit work to bring a new nuclear facility into compliance for a DOE Operational Readiness Review, and a new analytical laboratory to support production activities. He managed renovation of an existing building and

design, fabrication and installation of a process to requalify and recertify nuclear components for reuse and life extension, and managed the design and construction of a new facility for maintenance of nuclear weapons transportation tractor trailer and rail fleets and on-site plant and equipment fleets. He managed construction of full and half scale replica models of existing assembly structures for destructive testing with up to 300 lbs. of high explosives. He managed a test program to construct and test a 1/8 scale loads model of a proposed total containment facility to measure blast loads for various explosive design configurations. He oversaw the preparation and execution of a Test Plan to measure internal and external explosive blast loads at a full scale destructive test of an assembly cell structure. He has an active DOE "Q" clearance.

MARK SOLLENBERGER, BS, *JUPITER*. Mr. Sollenberger has BS in mathematics and more than 25 years of project/program management experience, supporting Defense, Environmental, Uranium Enrichment and Energy R&D Programs. Assignments typically involved high-priority, fast-tracked, sensitive projects ranging from general utilities facilities to prototype U.S. Navy propulsion systems, as well as CERCLA decontamination and decommissioning efforts at highly complex, state-of-the-art, chemically-hazardous production facilities, and precision-manufactured uranium enrichment hardware. Individual TPC exceeded $350M. Mr. Sollenberger's primary expertise includes development, maintenance, and leadership of highly effective, multi-disciplined, matrixed Project Teams, focused on goal-based objectives of design development, construction, testing, and Start-Up functions. His recent unique experience includes successful management and completion of the first major Defense Program critical capital line-item project to be executed under the new NNSA Project Management Guidelines (DOE Order 413.3) at the Y-12 National Security Complex. He has effective problem-solving, motivational, communication, and presentation skills and expertise associated with working and communicating with subordinates, peers, senior management, and a diverse customer base. Mr. Sollenberger has strong experience in purchasing and contract negotiations on both the service provider and customer sides of the contracting arena. He has led and supported External Independent Reviews and Independent Project Reviews at SRS, LANL and the Y-12 National Security Complex.\ and has maintained an active DOE "Q" clearance since 1976.

EDMOND G. TOURIGNY, MEng, *JUPITER.* Mr. Tourigny is a recognized authority on nuclear facilities operations and safety. Over the past 30 years, he has provided leadership in nuclear safety, nuclear engineering analysis, risk assessment, and nuclear facility safety document development. For 16 years, he served DOE in a variety of senior nuclear engineering positions. In addition, he served in senior management positions with the NRC for over 14 years. Mr. Tourigny currently performs safety analysis of nuclear operations and facilities for *JUPITER* Corporation. Mr. Tourigny served in several management and leadership positions for the DOE Office of Nuclear Energy in the areas of Nuclear Facilities Management, Nuclear Facilities Transition, Technical Support, and Depleted Uranium Hexafluoride Management. Among other responsibilities, he managed over $150M in facility operations and infrastructure activity, as well as safety of operations at the Idaho National Laboratory. He managed line-item construction projects, general plant projects, and various technical programs. In 1990–1992 Mr. Tourigny managed facility design, engineering activities, and facility safety document development and issuance in the DOE New Production Reactors Program. During his years with NRC, Mr. Tourigny served as senior operating reactor project manager, low-level radioactive waste program manager, program analyst, and special assistant. In these positions, he managed regulatory and license issues, authored dozens of safety evaluations, and served as an expert in nuclear facility safety and operations. Having served as nuclear engineer for Westinghouse Electric Corporation and Nuclear Materials and Equipment Corporation, Mr. Tourigny performed nuclear power plant, power reactor, and fuel competitive analyses. As an Atomic Energy Commission trainee in nuclear operations, Mr. Tourigny completed a reactor operator licensing program. Mr. Tourigny has masters degrees in Industrial Engineering and Nuclear Engineering, as well as a bachelors degree in Nuclear Engineering.

ARLENE WEINER, M.E., *JUPITER*. Ms. Weiner has an M.E. in Mining Engineering and a BS in Geological Sciences. She has over 25 years of experience in environmentally related projects involving significant coordination with members of local, Federal, and State Regulatory Agencies. Her professional duties have included budgeting, staffing, reporting, and project development. She has participated in External Independent Reviews (EIRs) at the Savannah River Site for the Pu Packaging and Stabilization Project, and the INEEL WAG3 CERCLA Disposal Facility (ICDF). She has led the EIR of the INEEL Glovebox Excavator Project and has recently led the EIR at the Los Alamos National Laboratory TA 50 Waste Management Risk Mitigation. In addition, she provided project planning support for the EIR conducted at Argonne National Laboratory for the Mechanical and Control System Upgrade. Ms. Weiner manages a project for the Bureau of Engraving and Printing in Washington D.C., and provides environmental services. He has an active DOE "Q" clearance.

EDWARD J. ZIEGLER, MS, *JUPITER*. Mr. Ziegler has an MS in business administration and a BS in mechanical engineering. He has over 20 years of experience working as an engineer, specializing in financial and regulatory issues. Mr. Ziegler provides effective project management (earned value) in numerous Capital Investment and Life Cycle Cost analyses for DOE, NRC, National Laboratories, Utilities and industry on a variety of power generating systems, research, and process plants. He has managed the estimating and project controls organizations for SRS projects and directed the development of several computer programs for cost estimating and scheduling. He has served as the Project Manager for Independent Cost Estimating (ICE) teams conducting capital cost audits of environmental restoration and waste management projects for DOE sites in Kansas City, Albuquerque, Los Alamos, Fernald, Pantex, Brookhaven, and Princeton. In addition, he has been responsible for staffing and management of cost estimators, planners, and computer support personnel.

B. SCHEDULE ILLUSTRATIONS

B-1. PAOU WBS

P Reactor Closure WBS

WBS Level	WBS Code	WBS Name	BL Project Total Cost	% of Total	Elements w/ $'s
1	RPT6 PAOU	PAOU - BOE Schedule [critical path fixed]	$77,211,724		
2	RPT6 PAOU.01	SRS	$77,211,724		
3	RPT6 PAOU.01.29	EM Savannah River SIte	$77,211,724		
4	RPT6 PAOU.01.29.50	ARRA	$77,211,724		
5	RPT6 PAOU.01.29.50.32	Area Completion	$77,211,724		
6	RPT6 PAOU.01.29.50.32.02	New & Accelerated	$77,211,724		
7	RPT6 PAOU.01.29.50.32.02.05	Steel Creek Watershed	$77,211,724		
8	RPT6 PAOU.01.29.50.32.02.05.02	P Area Operable Unit	$77,211,724		
9	RPT6 PAOU.01.29.50.32.02.05.02.13	Preliminary Engineering	$49,423	0.06%	1
9	RPT6 PAOU.01.29.50.32.02.05.02.14	Regulatory Requirements	$223,884		
10	RPT6 PAOU.01.29.50.32.02.05.02.14.02	Early Action Record of Decision (ESD)	$38,366	0.05%	2
10	RPT6 PAOU.01.29.50.32.02.05.02.14.03	Proposed Plan	$0		
10	RPT6 PAOU.01.29.50.32.02.05.02.14.04	Record of Decision	$0		
10	RPT6 PAOU.01.29.50.32.02.05.02.14.06	EE/CA Ash Basin & P-007 Outfall	$87,198	0.11%	3
10	RPT6 PAOU.01.29.50.32.02.05.02.14.07	EE/CA Process Sewer	$98,320	0.13%	4
9	RPT6 PAOU.01.29.50.32.02.05.02.15	Detailed Engineering & Preconstruction	$149,984		
10	RPT6 PAOU.01.29.50.32.02.05.02.15.01	Early Action	$149,984		
11	RPT6 PAOU.01.29.50.32.02.05.02.15.01.01	Early Action Detailed Engineering	$0		
11	RPT6 PAOU.01.29.50.32.02.05.02.15.01.02	Early Action RAIP	$149,984	0.19%	5
10	RPT6 PAOU.01.29.50.32.02.05.02.15.02	Final Action	$0		
11	RPT6 PAOU.01.29.50.32.02.05.02.15.02.01	Detailed Engineering	$0		
11	RPT6 PAOU.01.29.50.32.02.05.02.15.02.03	LUCIP	$0		
11	RPT6 PAOU.01.29.50.32.02.05.02.15.02.04	Procurement	$0		
9	RPT6 PAOU.01.29.50.32.02.05.02.16	Construction	$26,577,789		
10	RPT6 PAOU.01.29.50.32.02.05.02.16.01	Early Action	$2,922,905		
11	RPT6 PAOU.01.29.50.32.02.05.02.16.01.01	Early Action SVE System\Cask Car Railroad	$2,095,955	2.71%	6
11	RPT6 PAOU.01.29.50.32.02.05.02.16.01.02	Early Action P007 & Ash Basin	$826,950	1.07%	7
10	RPT6 PAOU.01.29.50.32.02.05.02.16.02	Final Action	$23,625,036	30.60%	8
10	RPT6 PAOU.01.29.50.32.02.05.02.16.03	Post Construction	$29,848	0.04%	9
9	RPT6 PAOU.01.29.50.32.02.05.02.29	Project Support	$0		
9	RPT6 PAOU.01.29.50.32.02.05.02.39	Project Support (RD Phase)	$0		
9	RPT6 PAOU.01.29.50.32.02.05.02.90	D&D	$50,183,275		
10	RPT6 PAOU.01.29.50.32.02.05.02.90.10	D&D of Facilities	$50,183,275		
11	RPT6 PAOU.01.29.50.32.02.05.02.90.10.03	105P	$50,183,275		
12	RPT6 PAOU.01.29.50.32.02.05.02.90.10.03.10	Deactivation	$10,697,721	13.86%	10
12	RPT6 PAOU.01.29.50.32.02.05.02.90.10.03.20	Decommissioning	$39,485,555	51.14%	11
9	RPT6 PAOU.01.29.50.32.02.05.02.98	SRNS Relocation	$27,370	0.04%	12

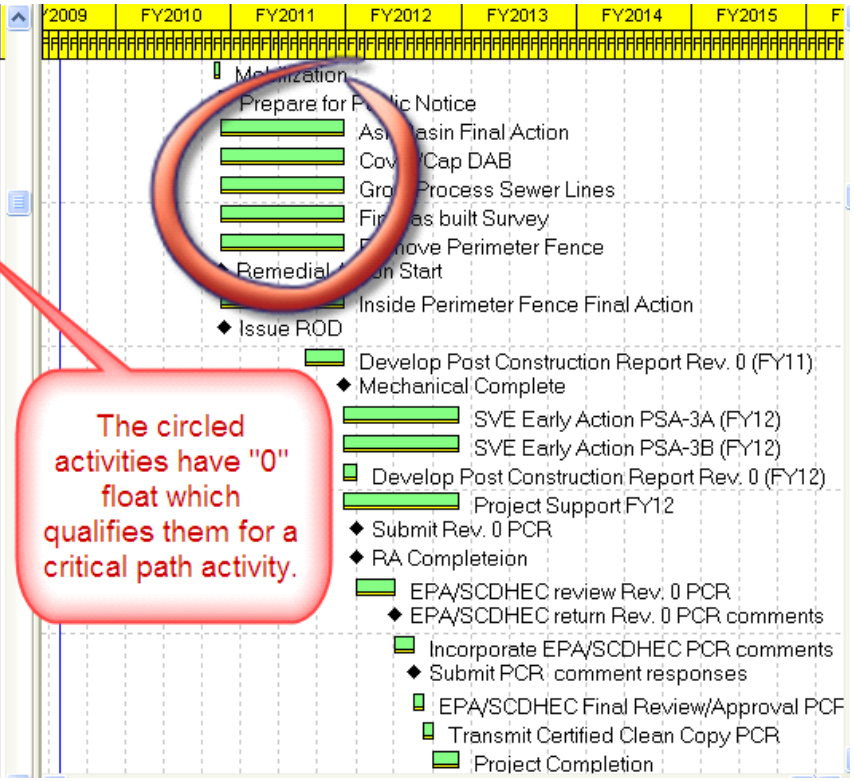
B-2. RAOU WBS

R Reactor Closure WBS

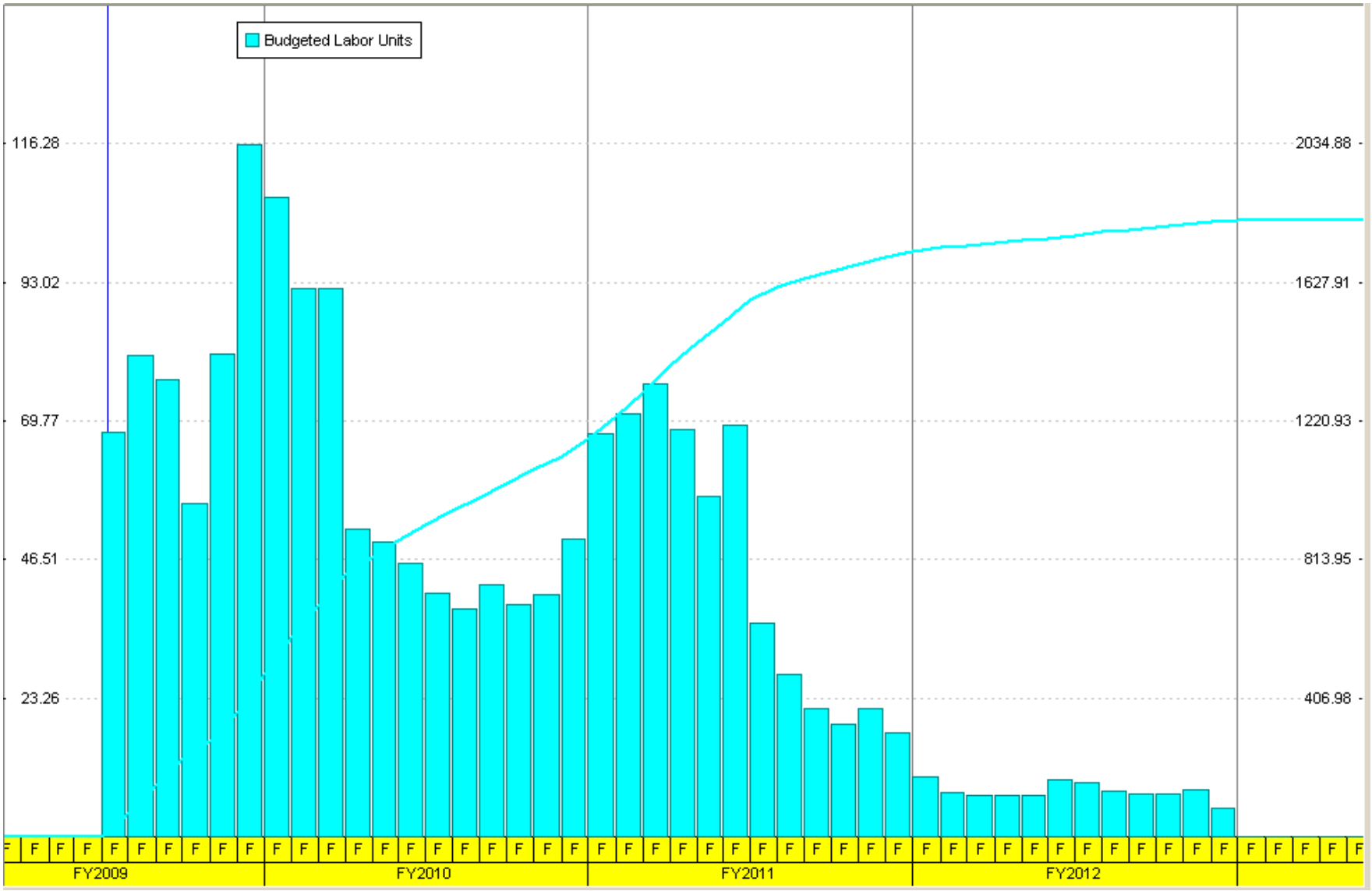
WBS Level	WBS Code	WBS Name	BL Project Total Cost	% of Total	Elements w/ $'s
1	FNT9-CW	RAOU - BOE Current Working Schedule	$81,502,339		
2	FNT9-CW.01	SRS	$81,502,339		
3	FNT9-CW.01.29	EM Savannah River Site	$81,502,339		
4	FNT9-CW.01.29.50	ARRA	$81,502,339		
5	FNT9-CW.01.29.50.32	Area Completion	$81,502,339		
6	FNT9-CW.01.29.50.32.02	New and Accelerated	$81,502,339		
7	FNT9-CW.01.29.50.32.02.03	Lower Three Runs Watershed	$81,502,339		
8	FNT9-CW.01.29.50.32.02.03.01	R-Area Operable Unit	$81,502,339		
9	FNT9-CW.01.29.50.32.02.03.01.05	Interim/Early Actions	$36,265		
10	FNT9-CW.01.29.50.32.02.03.01.05.01	Early Action Proposed Plan	$6,604	0.01%	1
10	FNT9-CW.01.29.50.32.02.03.01.05.02	Early Action Record of Decision	$29,661	0.04%	2
10	FNT9-CW.01.29.50.32.02.03.01.05.03	EE/CA for R-Area Cask Car Railroad Tracks	$0		
9	FNT9-CW.01.29.50.32.02.03.01.07	RFI/RI/BRA Report	$12,681		
10	FNT9-CW.01.29.50.32.02.03.01.07.05	105-R Characterization Summary	$0		
10	FNT9-CW.01.29.50.32.02.03.01.07.03	105-R Curie Location Inventory Characterization Rep	$0		
10	FNT9-CW.01.29.50.32.02.03.01.07.02	105-R Structural Analysis Characterization Report	$0		
10	FNT9-CW.01.29.50.32.02.03.01.07.04	105-R Hazard Location Inventory Characterization R	$0		
10	FNT9-CW.01.29.50.32.02.03.01.07.01	Combined Document	$12,681	0.02%	3
9	FNT9-CW.01.29.50.32.02.03.01.13	Preliminary Engineering	$0		
9	FNT9-CW.01.29.50.32.02.03.01.14	Regulatory Requirements	$12,026		
10	FNT9-CW.01.29.50.32.02.03.01.14.01	Proposed Plan	$0		
10	FNT9-CW.01.29.50.32.02.03.01.14.02	Record of Decision	$0		
10	FNT9-CW.01.29.50.32.02.03.01.14.03	Engineering Evaluation/Cost Analysis	$12,026	0.01%	4
10	FNT9-CW.01.29.50.32.02.03.01.14.04	EC/CA - R-Ash Basin	$0		
9	FNT9-CW.01.29.50.32.02.03.01.15	Engineering & Pre-Construction	$0		
9	FNT9-CW.01.29.50.32.02.03.01.16	Construction	$26,397,036		
10	FNT9-CW.01.29.50.32.02.03.01.16.01	Ash Basin	$1,700,000	2.09%	5
10	FNT9-CW.01.29.50.32.02.03.01.16.02	Monitoring Wells	$448,000	0.55%	6
10	FNT9-CW.01.29.50.32.02.03.01.16.03	Soil Excavation	$624,000	0.77%	7
10	FNT9-CW.01.29.50.32.02.03.01.16.04	Final Action	$23,625,036	28.99%	8
10	FNT9-CW.01.29.50.32.02.03.01.16.06	Miscellaneous Construction	$0		
10	FNT9-CW.01.29.50.32.02.03.01.16.05	Post Construction	$0		
9	FNT9-CW.01.29.50.32.02.03.01.29	Project Support - RI/FS Phase	$0		
9	FNT9-CW.01.29.50.32.02.03.01.99	Outyear Planning Packages	$0		
9	FNT9-CW.01.29.50.32.02.03.01.90	R Area D&D	$54,986,150		
10	FNT9-CW.01.29.50.32.02.03.01.90.10	D&D R Area Facilities	$54,986,150		
11	FNT9-CW.01.29.50.32.02.03.01.90.10.01	151-1R	$0		
11	FNT9-CW.01.29.50.32.02.03.01.90.10.02	152-R	$0		
11	FNT9-CW.01.29.50.32.02.03.01.90.10.03	105R	$54,986,150		
12	FNT9-CW.01.29.50.32.02.03.01.90.10.03.10	Deactivation	$16,441,784	20.17%	9
12	FNT9-CW.01.29.50.32.02.03.01.90.10.03.20	Decommissioning	$38,544,367	47.29%	10
9	FNT9-CW.01.29.50.32.02.03.01.98	SRNS Relocation	$58,180	0.07%	11

B-3. PAOU Schedule Durations

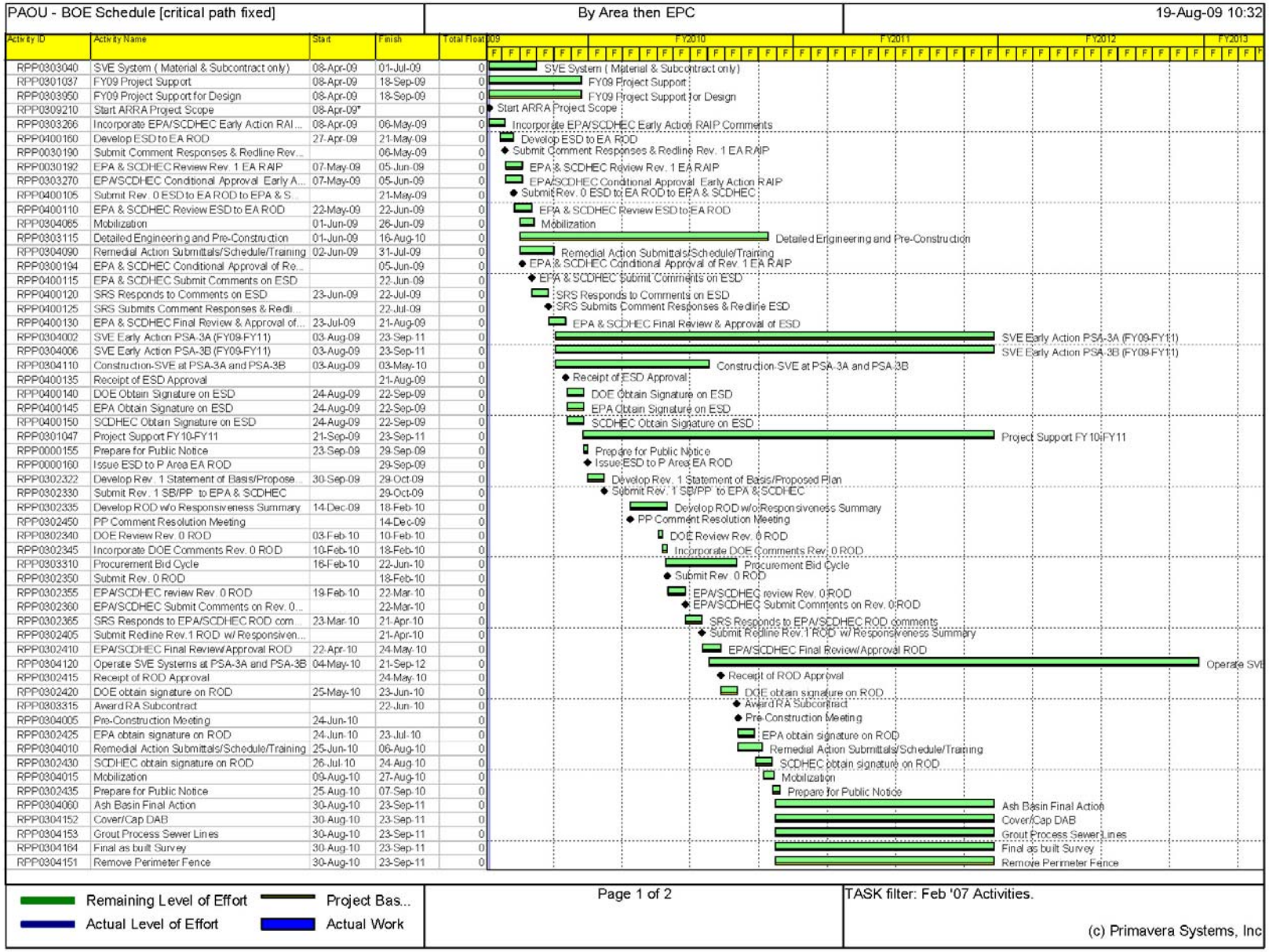
Activity ID	Activity Name	Start	Finish	Total Float
RPP0304015	Mobilization	09-Aug-10	27-Aug-10	0
RPP0302435	Prepare for Public Notice	25-Aug-10	07-Sep-10	0
RPP0304060	Ash Basin Final Action	30-Aug-10	23-Sep-11	0
RPP0304152	Cover/Cap DAB	30-Aug-10	23-Sep-11	0
RPP0304153	Grout Process Sewer Lines	30-Aug-10	23-Sep-11	0
RPP0304164	Final as built Survey	30-Aug-10	23-Sep-11	0
RPP0304151	Remove Perimeter Fence	30-Aug-10	23-Sep-11	0
RPP0304020	Remedial Action Start	30-Aug-10		0
RPP0304050	Inside Perimeter Fence Final Action	30-Aug-10	23-Sep-11	0
RPP0302440	Issue ROD		07-Sep-10	0
RPP0304200	Develop Post Construction Report Rev. 0 (F...	24-May-11	23-Sep-11	0
RPP0304030	Mechanical Complete		23-Sep-11	0
RPP0304012	SVE Early Action PSA-3A (FY12)	26-Sep-11	21-Sep-12	0
RPP0304026	SVE Early Action PSA-3B (FY12)	26-Sep-11	21-Sep-12	0
RPP0304290	Develop Post Construction Report Rev. 0 (F...	26-Sep-11	04-Nov-11	0
RPP0301057	Project Support FY12	26-Sep-11	21-Sep-12	0
RPP0304210	Submit Rev. 0 PCR		04-Nov-11	0
RPP0304220	RA Completeion		04-Nov-11	0
RPP0304225	EPA/SCDHEC review Rev. 0 PCR	05-Nov-11	03-Mar-12	0
RPP0304230	EPA/SCDHEC return Rev. 0 PCR comments		03-Mar-12	0
RPP0304235	Incorporate EPA/SCDHEC PCR comments	04-Mar-12	02-May-12	0
RPP0304255	Submit PCR comment responses		02-May-12	0
RPP0304270	EPA/SCDHEC Final Review/Approval PCR	03-May-12	01-Jun-12	0
RPP0304275	Transmit Certified Clean Copy PCR	02-Jun-12	01-Jul-12	0
RPP0304280	Project Completion	02-Jul-12	21-Sep-12	0

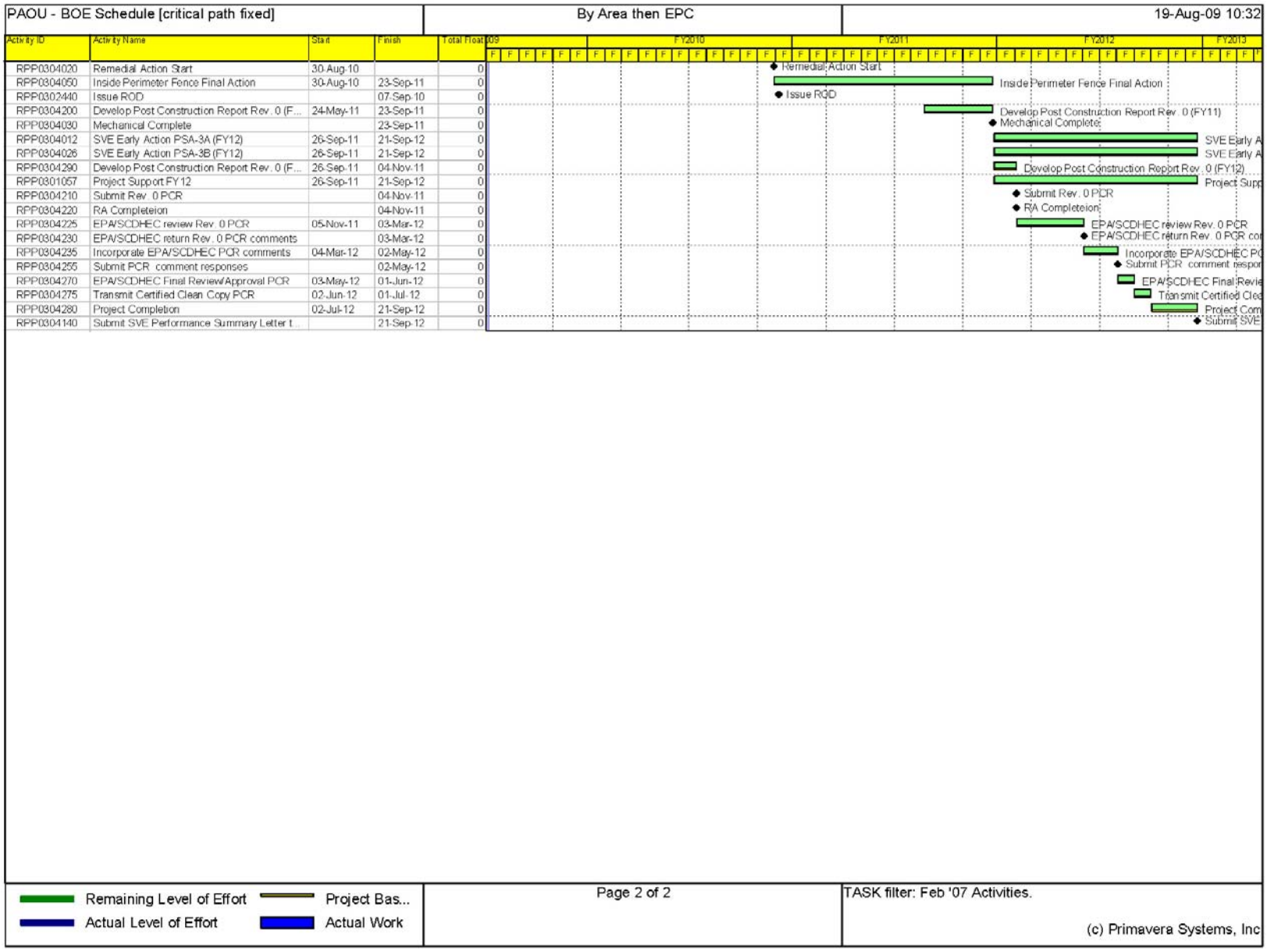


B-4. PAOU Labor Units Histogram



B-5. PAOU Critical Path




PAOU - BOE Schedule [critical path fixed]
By Area then EPC
19-Aug-09 10:32
Activity ID
Activity Name
Start
Finish
Total Float
FY2009
FY2010
FY2011
FY2012
FY2013
RPP0304020 Remedial Action Start 30-Aug-10 0
RPP0304050 Inside Perimeter Fence Final Action 30-Aug-10 23-Sep-11 0
RPP0302440 Issue ROD 07-Sep-10 0
RPP0304200 Develop Post Construction Report Rev. 0 (F... 24-May-11 23-Sep-11 0
RPP0304030 Mechanical Complete 23-Sep-11 0
RPP0304012 SVE Early Action PSA-3A (FY12) 26-Sep-11 21-Sep-12 0
RPP0304026 SVE Early Action PSA-3B (FY12) 26-Sep-11 21-Sep-12 0
RPP0304290 Develop Post Construction Report Rev. 0 (F... 26-Sep-11 04-Nov-11 0
RPP0301057 Project Support FY12 26-Sep-11 21-Sep-12 0
RPP0304210 Submit Rev. 0 PCR 04-Nov-11 0
RPP0304220 RA Completeion 04-Nov-11 0
RPP0304225 EPA/SCDHEC review Rev. 0 PCR 05-Nov-11 03-Mar-12 0
RPP0304230 EPA/SCDHEC return Rev. 0 PCR comments 03-Mar-12 0
RPP0304235 Incorporate EPA/SCDHEC PCR comments 04-Mar-12 02-May-12 0
RPP0304255 Submit PCR comment responses 02-May-12 0
RPP0304270 EPA/SCDHEC Final Review/Approval PCR 03-May-12 01-Jun-12 0
RPP0304275 Transmit Certified Clean Copy PCR 02-Jun-12 01-Jul-12 0
RPP0304280 Project Completion 02-Jul-12 21-Sep-12 0
RPP0304140 Submit SVE Performance Summary Letter t... 21-Sep-12 0
Remedial Action Start
Inside Perimeter Fence Final Action
Issue ROD
Develop Post Construction Report Rev. 0 (FY11)
Mechanical Complete
SVE Early A
SVE Early A
Develop Post Construction Report Rev. 0 (FY12)
Project Supp
Submit Rev. 0 PCR
RA Completeion
EPA/SCDHEC review Rev. 0 PCR
EPA/SCDHEC return Rev. 0 PCR cor
Incorporate EPA/SCDHEC PC
Submit PCR comment respor
EPA/SCDHEC Final Revie
Transmit Certified Cle
Project Com
Submit SVE
Remaining Level of Effort
Actual Level of Effort
Project Bas...
Actual Work
Page 2 of 2
TASK filter: Feb '07 Activities.
(c) Primavera Systems, Inc

C. COST ESTIMATE TABLES

C-1. P Area Basis of Estimate Roadmap

	Cost		Schedule		Estimate	
Reference	**From 02-Cost*ARRA FY09-FY11 P Area_Cost.pdf* (file on DVD)**		**Cost from Primavera P6 Project; Page # from detailed schedule file *PAUO BL Schedule by WBS.pdf***		**From 02-Cost*ARRA FY09-FY11 P Area_Cost.pdf* (file on DVD)**	**EIR Team Conclusion on Adequacy of Estimate Basis**
Work Package Title	**$ (k)**	**Page**	**$ (k)**	**Page**	**Page**	
SC P Area OU (FY09)	2268		3,157			
SC P Area OU Facility Clean out (FY09)	4,604		6,409			
	6,872		**9,566**			
PAOU Project Support	846	15	846	4	70,72	Tenuous/Inadequate Estimate Basis
PAOU Proposed Plan	73	16	73	1	53/54	Tenuous/Inadequate Estimate Basis
PAOU EE/CA Ash Basin/P-007Out	40	16	40	2	44,49	Tenuous/Inadequate Estimate Basis
PAOU EE/CA Process Sewer	36	17	36	2	44,49	Tenuous/Inadequate Estimate Basis
PAOU ROD	134	17	134	2		Estimate basis is adequate, see estimate pg 39, schedule activities, as estimate basis
PAOU LUCIP	64	17	64	3		Estimate basis is adequate, see estimate pg 39, schedule activities, as estimate basis
PAOU Final Design	919	18	919	3	50	Tenuous/Inadequate Estimate Basis
PAOU Early Action Design	30	18	30	2	44,49,50	Tenuous/Inadequate Estimate Basis
PAOU Post Construction Activities	341	18	341	4	51,52,61-66	Tenuous/Inadequate Estimate Basis
P Area OU Early Action Soil Evaporation Extraction (SVE)	2,896	19	2,896	3	57,58,62	Tenuous/Inadequate Estimate Basis

	Cost		Schedule		Estimate	
Reference	**From 02-Cost*ARRA FY09-FY11 P Area_Cost.pdf* (file on DVD)**		**Cost from Primavera P6 Project; Page # from detailed schedule file *PAUO BL Schedule by WBS.pdf***		**From 02-Cost*ARRA FY09-FY11 P Area_Cost.pdf* (file on DVD)**	**EIR Team Conclusion on Adequacy of Estimate Basis**
Work Package Title	**$ (k)**	**Page**	**$ (k)**	**Page**	**Page**	
P Area OU Final Remedial Action	26,484	20	26,484	3,4	51,60	Tenuous/Inadequate Estimate Basis
P Area OU Early Action P-007 and Ash Basin -	53	20	53	3	59	Tenuous/Inadequate Estimate Basis
P Area OU Early Action P-007 and Ash Basin	714	20	714	3	59	Tenuous/Inadequate Estimate Basis
P Area OU Cask Car Railroad Track	301	20	301	3	44,58/59,68	Tenuous/Inadequate Estimate Basis
105-P Deactivation Field Support Waste Disposal	120	21	120	4	100	N/A – part of operations deactivation scope
105-P Remove Filter Compartment	215	21	215	4	90	N/A – part of operations deactivation scope
105-P Install Evaporators	1,624	22	1,624	4	95	N/A – part of operations deactivation scope
105-P Operator Evaporators	2,165	22	2,165	4	95	N/A – part of operations deactivation scope
105-P Rent Crane to remove Gantry Crane	1,404	23	1,404	4	102	N/A – part of operations deactivation scope
105-P Seal Openings above zero elevation	746	23	746	5	113	Basis of Estimate is well prepared, fully supported by estimate detail and assumptions, and tracks accurately to the summary level
105-P Seal Openings at zero elevation	1,140	23	1,140	5	114	"
105-P Stack Removal	2,346	23	2,346	5	105	"
105-P Decommissioning Work	1,285	23	1,285	5	108 (Misc D&R)	"
105-P Construction Roof Water Drains	1,919	24	1,919	5	106-107	"

	Cost		Schedule		Estimate	
Reference	**From 02-Cost*ARRA FY09-FY11 P Area_Cost.pdf* (file on DVD)**		**Cost from Primavera P6 Project; Page # from detailed schedule file *PAUO BL Schedule by WBS.pdf***		**From 02-Cost*ARRA FY09-FY11 P Area_Cost.pdf* (file on DVD)**	**EIR Team Conclusion on Adequacy of Estimate Basis**
Work Package Title	**$ (k)**	**Page**	**$ (k)**	**Page**	**Page**	
105-P D&R Disassembly Basin	500	24	500	5	104	"
105-P Decommissioning Field Support/Waste Disposal	3,993	24	3,993	5	115	"
Core holes, install river tap	240	25	240	5	108&117	"
Purchase and Install Batch Plant	66	25	66	5	117	"
Operate Batch Plant	2,482	25	2,482	5	117	"
Grout Reactor Vessel	607	25	607	5	111	"
Grout other Areas 105-P	2,913	25	2,913	5	110-113	"
Grout -40 elevation	5,675	26	5,675	5	109	"
Grout -20 elevation	6,476	26	6,476	5	105	"
Grout Disassembly Basin	4,390	26	4,390	5	104	"
Deactivation Project Support	22	26	22	5	101	"
105P Decommissioning Project Supt	2,455	26	2,455	5	116	"
105P Decommissioning Design Engineer	74	27	74	5	119	"
Subtotal (FY10-FY11)	**75,788**		**75,788**			
Grand Total (Direct)	**82,660**		**85,354**			
Total (Direct) w/out Deactivation Work (green highlighting)	**72,507**		**73,396**			

C-2. R Area Basis of Estimate Roadmap

Reference		Cost		Schedule		Estimate	EIR Team Conclusion on Adequacy of Estimate Basis
		from 02-Cost*ARRA FY09-FY11 R Area_Cost.pdf* (file on DVD)		Cost from XER, Page # from detailed schedule file *RAUO BL Schedule by WBS.pdf*		from file *R-Area Estimate .pdf*	
Work Package / Schedule Activity ID	Work Package Title	$ (k)	Page	$ (k)	Page	Page	
RAP0301	Lower Three Runs R Area OU	3,166		4,549			
RAP0301	Lower Three Runs R Area OU	6,427		7,746			
		9,593		**12,296**			
SFN20201L	RAOU Project Support	287	18	287	4	49	Tenuous/Inadequate Estimate Basis
SFN20318A	RAOU Proposed Plan	71	18	71	2	45	Tenuous/Inadequate Estimate Basis
SFN20416L	RAOU EE/CA	206	19	206	2	45	Tenuous/Inadequate Estimate Basis
SFN20417L	RAOU ROD	123	19	123	1&2	45	Tenuous/Inadequate Estimate Basis
SFN30391A	RAOU LUCIP	114	19	114	3	46	Tenuous/Inadequate Estimate Basis
SFN30394B	RAOU CMI/RAIP	89	20	89	3	46	Tenuous/Inadequate Estimate Basis
SFN30413L	RAOU Definitive Design	209	20	209	3	46	Tenuous/Inadequate Estimate Basis
SFN40419A	RAOU Post Construction Activities	244	20	244	4	47	Tenuous/Inadequate Estimate Basis
SFN40503L	RAOU Tree Removal	1,136	21	1,136	3	47	Tenuous/Inadequate Estimate Basis
SFN40505L	R Cask Car RR Tracks Soil Excavation	306	21	306	4	47	Tenuous/Inadequate Estimate Basis
SFN41903A	RAOU CAP Installation	18,385	21	18,385	4	48	Tenuous/Inadequate Estimate Basis
SFN41906A	RAOU Concrete CAP for Disassembly Basin	8,187	22	8,187	4	50	Tenuous/Inadequate Estimate Basis
SFN60201R	RAOU SRNS Relocation	32	22	32	7	51	Tenuous/Inadequate Estimate Basis
SFNJ0417L	RAOU EA Record of Decision	8	22	8	6	44	Tenuous/Inadequate Estimate Basis

Reference		Cost		Schedule		Estimate	EIR Team Conclusion on Adequacy of Estimate Basis
		from 02-Cost*ARRA FY09-FY11 R Area_Cost.pdf* (file on DVD)		Cost from XER, Page # from detailed schedule file *RAUO BL Schedule by WBS.pdf*		from file *R-Area Estimate .pdf*	
Work Package / Schedule Activity ID	**Work Package Title**	**$ (k)**	**Page**	**$ (k)**	**Page**	**Page**	
SFNL74A02	Drain Fluids from Systems 105R	349	23	349	5	51	N/A – part of operations deactivation scope
SFNL74A03	Moderator Removal 105R	1,026	23	1,026	5	52	N/A – part of operations deactivation scope
SFNL74A04	Process Rm Equip Removal	10	23	10	5,6	52	N/A – part of operations deactivation scope
SFNL74A05	Airgap/Seal Penetrat 105R	64	24	64	5,6	52	N/A – part of operations deactivation scope
SFNL74A07	105R Deact Fld Support/Waste Disp	1,510	24	1,510	5	53	N/A – part of operations deactivation scope
SFNL74A09	Initial Characterizations	108	24	108	5,6	53	N/A – part of operations deactivation scope
SFNL74A11	Water Management 105-R	956	25	956	5,6	54	N/A – part of operations deactivation scope
SFNL74A12	Grout 105R Disassembly Basin	31	25	31	6	54	Basis of Estimate is well prepared, fully supported by estimate detail and assumptions, and tracks accurately to the summary level
SFNL74A13	Deact Planning Package	2,192	25	2,192	6	55	N/A – part of operations deactivation scope
SFNL74A14	Deacomm Planning Package	17,858	26	17,858	6,7	55	Basis of Estimate is well prepared, fully supported by estimate detail and assumptions, and tracks accurately to the summary level
SFNL74A15	Remove Exterior Metal/Filter Compartments	587	26	587	6	56	N/A – part of operations deactivation scope
SFNL74B00	105R Grouting	17,271	27	17,271	6,7		Basis of Estimate is well prepared, fully supported by estimate detail and assumptions, and tracks accurately to the summary level
SFNL74D01	105R Deactivation Project Support	938	27	938	5	56	N/A – part of operations deactivation scope

Reference		Cost		Schedule		Estimate	EIR Team Conclusion on Adequacy of Estimate Basis
		from 02-Cost*ARRA FY09-FY11 R Area_Cost.pdf* (file on DVD)		Cost from XER, Page # from detailed schedule file *RAUO BL Schedule by WBS.pdf*		from file *R-Area Estimate .pdf*	
Work Package / Schedule Activity ID	**Work Package Title**	**$ (k)**	**Page**	**$ (k)**	**Page**	**Page**	
Subtotal (FY10-FY11)		**72,297**		**72,297**			
Grand Total (Direct)		**81,890**		**84,593**			
Total (Direct) w/out Deactivation Work (green highlighting)		**67,723**		**69,107**			

D. CORRECTIVE ACTION PLAN

Major Findings / Findings

Red – MFs Yellow – Fs

ID #	MFs, Fs, and Recommendations	Site Comment / Resolution	EIR Team Perspective	Current Status
MF-1-1	**MF-1-1**: The Project Scope is not adequately defined and documented to allow identification and quantification of risks. **Recommendation:** Produce a document (or include in an existing document) a concise, well-defined scope that can be used as a basis for coordination within all other project documentation such as cost and schedule.			
F-1-1	**F-1-1**: Key Performance Parameters are not adequately defined and documented. **Recommendation:** Produce a list of Key Performance Parameters that clearly define successful completion of the project scope, and include it in the Project Execution Plan.			
F-1-2:	**F-1-2**: The level of design completion is not adequate to support a CD 2/3 decision. **Recommendation:** Formalize a detailed design schedule that results in making a minimum of those design documents that define the major portion of the construction cost available for 60% review as soon as reasonable.			
F-1-3	**F-1-3**: The WBS and WBS Dictionary are inadequately developed and defined. **Recommendation:** Develop a WBS dictionary that allows distinct project work packages to be identified and tracked.			

ID #	MFs, Fs, and Recommendations	Site Comment / Resolution	EIR Team Perspective	Current Status
MF-2-1	**MF-2-1**: Important interfaces are missing from the schedule. **Recommendation:** Add activities which the project depends on for success even if they are not part of the direct scope. These activities should include the milestones included in the DOE CD process.			
MF-2-2	**MF-2-2**: A true critical path is not present in the schedule. **Recommendation:** Include all activities required for successful completion with reasonable logic relationships and calculate new critical path.			
MF-2-3	**MF-2-3**: Schedule contingency is not included in project baseline schedule. **Recommendation:** Perform schedule risk analyses and use results to determine a schedule contingency durations.			
F-2-1	**F-2-1**: Some activity durations in the baseline schedule do not appear reasonable. **Recommendation:** Review scheduled activities for the purpose of comparing assigned durations with the estimated effort found in the estimate.			
F-2-2	**F-2-2**: Basis of schedules, including assumptions, are not present. **Recommendation:** Develop basis of schedules including approach and methodology considerations.			
MF-3-1	**MF-3-1:** Several major activities in the cost estimate, principally waste unit remediation, do not have bases for man-hours and dollars. **Recommendation:** The P&R ACP PAOU Final Remediation Action cost estimate, dated February 27, 2007, should be updated and revised to reflect the new scope, applicable wage rates, current site adders and acquisition strategy.			

ID #	MFs, Fs, and Recommendations	Site Comment / Resolution	EIR Team Perspective	Current Status
MF-3-2	**MF-3-2:** The cost estimate is based on **self-performing** project design and construction services whereas the current acquisition strategy is to **subcontract** the majority of the work scope. **Recommendation:** The current scope is for subcontract workers therefore, the cost estimate should contain contractor craft wage rates applicable with SRS Site Davis/Bacon or union agreements.			
F-3-1	**F-3-1:** The cost estimate is not a current bottoms-up estimate. The project scope is in revision, and the cost estimate does not reflect the proposed changes. **Recommendation:** The P&R ACP cost estimate, dated January 22, 2009, (including an escalated February 27, 2007, remediation cost estimate) should be updated and revised to reflect the new scope, applicable wage rates, current site adders and acquisition strategy and other specific elements identified in Section 3.3.1.			
MF-4-1	**MF-4-1**: P and R Areas Closure Projects do not have project-specific risk management and assessment documents and demonstration of risk monitoring. **Recommendation:** Prepare project-specific risk management plans and risk assessments and monitor and manage risks for the PACP and the RACP in accordance with SRS processes and procedures.			
MF-5-1	**MF-5-1**: Project-specific Federal PEPs are incomplete and not approved. **Recommendation:** The Federal IPT should complete the PEPs and obtain appropriate approval signatures.			

ID #	MFs, Fs, and Recommendations	Site Comment / Resolution	EIR Team Perspective	Current Status
MF-5-2	**MF-5-2**: Decommissioning work/procurement awards are proceeding without CD-3 authority from the Acquisition Executive. **Recommendation:** Obtain proper authority to perform CD-3 work or stop work.			
MF-5-3	**MF-5-3**: The EVMS system is not certified. **Recommendation:** Complete certification of the EVMS system.			
F-5-1	**F-5-1**: The FPD is not certified to the required Level 3 for the magnitude of the project. **Recommendation:** Develop a schedule for completion of Level 3 certification and include in the CD- 2 approval memo from the Acquisition Executive.			
F-5-2	**F-5-2**: Current subcontracting acquisition strategy is not reflected in proposed cost-and-schedule baselines. **Recommendation:** Revise the project cost-and-schedule baselines and management documents to be consistent with the current subcontracting strategy.			
F-5-3	**F-5-3**: Federal staffing planning over the project life has not been completed **Recommendation:** The Federal IPT should complete an assessment of Federal staffing needs to support the P and R ACPs over the life of the project. Include a summary table in the IPT charter and PEP.			
F-5-4	**F-5-4**: Performance-Based Incentives (PBI) and PBI milestones have not been negotiated and included in the M&O contract and proposed baseline. **Recommendation:** Upon completion of project baseline planning, complete negotiation of PBIs for the P and R ACPs and include those milestones in the baseline schedule.			

ID #	MFs, Fs, and Recommendations	Site Comment / Resolution	EIR Team Perspective	Current Status
F-5-5	**F-5-5**: A project specific IPT charter has not been finalized and approved. **Recommendation:** Complete the IPT Charter and forward for signature.			
F-5-6	**F-5-6**: The FPD is assigned as temporary FPD by the SR Site Manager until the end of FY2009. A FPD must be appointed and approved by the Acquisition Executive. **Recommendation:** Include the appointment of the FPD in the CD-2 approval memo or a separate memo signed by the Acquisition Executive.			
F-5-7	**F-5-7**: The IPT failed in its review and acceptance of a significantly flawed CD-2 baseline proposal package. **Recommendation:** The IPT should perform a self-assessment of its performance in review and acceptance of the CD-2 submittal package and identify corrective measures (training, procedures, staff qualifications, etc) to improve its performance and share lessons learned with the rest of the SRS D&D community.			
F-7-1	**F-7-1**: The QAMP has not been finalized and approved **Recommendation:** Finalize the QAMP and obtain approval.			
F-7-2	**F-7-2**: The baseline estimate and schedule did not show that cost, time and resources for QA/QC have been adequately estimated and included. **Recommendation:** Include cost, time and resources for QA/QC in the baseline estimate and schedule.			

ID #	MFs, Fs, and Recommendations	Site Comment / Resolution	EIR Team Perspective	Current Status
MF-9-1	**MF-9-1**: Key Performance Parameters (Completion Criteria) and their validation methods have not been determined and included in the project baselines. **Recommendation:** Complete the planning of key parameters and their validation methods; verify in an approved management document, and include in the project cost-and-schedule baselines.			
F-9-1	**F-9-1**: Transition/CD-4 task planning is incomplete and not reflected in the proposed baseline. **Recommendation:** Complete the planning of the transition activities and tasks required to achieve CD-4 and include in the project cost-and-schedule baselines.			

Negative Observations

ID #	Negative Observations and Recommendations	Site Comment / Resolution	EIR Team Perspective	Current Status
O-3-1	**O-3-1:** The current cost estimate contains site personnel wage rates for the "self-perform" construction work. **Recommendation:** The revised cost estimate should reflect the Davis/Bacon and/or area union wage rates for the current "subcontracted" scope/construction work.			
O-3-2	**O-3-2:** Preliminary drawings and specifications are not available to facilitate the validation of the P&R ACP cost estimate and project funding profiles. **Recommendation:** Provide drawings and specifications to ensure a reliable bottoms-up cost estimate and precursor to support the subcontracted competitive bidding environment and facilitate the contract award process.			
O-4-1	**O-4-1**: The *ARRA Risk Management Master Plan* is unclear on the identification of the value (cost) of schedule contingency. **Recommendation**: The *ARRA Risk Management Master Plan* should be updated to require identification of the cost of schedule contingency (i.e., the value of the project hotel load that will be incurred if schedule contingency is used) for inclusion in the total cost contingency calculation.			
O-5-1	**O-5-1**: The SRNS ARRA PEP has not been finalized and approved. **Recommendation**: Complete and approve the SRNS ARRA PEP.			
O-5-2	**O-5-2**: The SRNS ARRA ACP TEP has not been finalized and approved. **Recommendation**: Complete and approve the SRNS ARRA ACP TEP.			
O-5-3	Upgraded to Finding F-5-7			

ID #	Negative Observations and Recommendations	Site Comment / Resolution	EIR Team Perspective	Current Status
O-5-4	**O-5-4**: The integrated project schedule will not contain dollar values for the BCWS of the resource loaded baseline schedule. **Recommendation**: Require SRNS, upon approval of CD-2, to submit to DOE the native baseline schedule file and the Cost Processor generated BCWS over the project life.			
O-5-5	**O-5-5**: The PDRI prepared by the Federal IPT significantly overstated the state of readiness for CD-2. **Recommendation**: Perform additional training/instruction on the use and preparation of the PDRI.			
O-5-6	**O-5-6**: The draft Project Operating Plan for P and R ACPs is incomplete and inconsistent with current baseline planning. **Recommendation**: Revise the POP upon completion of baseline planning.			
O-5-7	**O-5-7**: The corrective measures from the EVMS Compliance Review have not been implemented, and EVMS data has not been produced under a certified EVMS system. **Recommendation**: The DOE IPT should place the EVMS process for these projects under close surveillance for the initial six months of operation after approval of the proposed baselines.			
O-5-8	**O-5-8:** The proof-of principle grouting task is incorrectly included in the decommissioning WBS. **Recommendation:** Relocate the proof-of-principal task to the engineering WBS. Also, a management document should be prepared and approved that describes the scope, justification, budget, and schedule for performing this work.			

ID #	Negative Observations and Recommendations	Site Comment / Resolution	EIR Team Perspective	Current Status
O-6-1	**O-6-1**: The site has not yet received the approved Offsite Rule Request to handle R Disassembly Basin water at the P Disassembly Basin. **Recommendation:** No work activities associated with the transfer of basin water should occur before the approved Offsite Rule Request is approved.			
O-6-2	**O-6-2**: There is a potential perception issue when the D&D process stated in a public forum does not match the actual plans for sequencing decommissioning work activities. **Recommendation**: Information presented in a public forum should match the decommissioning plan to maintain credibility with the community.			
O-6-3	**O-6-3**: There does not appear to be a formal tracking system for regulatory submittals. **Recommendation**: Develop and maintain a formal regulatory submittal tracking system for both the P&RACPs.			
O-6-4	**O-6-4**: Costs provided in multiple environmental documents for P AOU are not consistent with other project-related cost data. **Recommendation**: Develop a single document that rolls up all the actual decommissioning costs for the individual projects so that the costs agree with other regulatory documents.			
O-6-5	**O-6-5**: ASA for the P-Reactor Facility may be out-of-date. **Recommendation**: Confirm that ASA is not materially out-of-date.			
O-6-6	**O-6-6**: Corrective action plans, comments, and resolutions are not centrally tracked. **Recommendation**: Develop a central data base or other suitable means to record and track comments, action plans and resolutions.			

ID #	Negative Observations and Recommendations	Site Comment / Resolution	EIR Team Perspective	Current Status
O-7-1	**O-7-1**: All work packages do not contain QA/QC requirements such as hold points. **Recommendation**: Ensure quality requirements are included I all work packages.			
O-7-2	**O-7-2**: All work packages do not have a required concurrence by QA that would ensure that appropriate QA/QC requirements would be reflected in the work packages. **Recommendation**: Include QA concurrence on all work packages.			
O-8-1	**O-8-1**: A risk that reportable quantities of D2O may be uncovered during D&D activities has not been screened in the P&RACPs risk assessments. **Recommendation**: Include this potential risk in the risk screening process for the updated risk assessments for the P and R projects.			
O-8-2	**O-8-2**: The security planning documents referenced in this section are not referenced and credited in any of the management documents provided for the CD-2 EIR (PEP, TEP, IPT, etc.) **Recommendation**: Include a reference to and summary of the security planning that has occurred that is pertinent to the P and R ACPs.			
O-9-1	**O-9-1**: Transition activities have not been screened in the risk assessment. **Recommendation**: Include transition activities in the risk assessment and separately identify cost-and-schedule contingencies for this phase of the project.			

ID #	Negative Observations and Recommendations	Site Comment / Resolution	EIR Team Perspective	Current Status
O-9-2	**O-9-2**: Transition planning does not include identification of successor organizations for operations or control of the completed projects. **Recommendation**: Identify organizations that will receive the completed project and document their concurrence in turnover plans with an MOU or signature on a transition plan (or a PEP that includes the transition plan).			